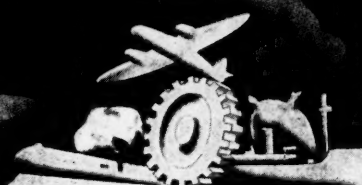


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A Liberal is a Conservative who has yet to attain full mental growth.

A Conservative is one who plays the game of life according to the rules.

A Radical is one who wants to change the rules every time they affect him adversely.

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GRINDING WHEELS

Out of the scientific research thoughts of MACKLIN experimental engineers come invaluable new means and methods, better and more uniform product control and development, that means higher quality and longer and more efficient production life for MACKLIN Grinding Wheels. Ask for the helpful services of a MACKLIN Sales Engineer.

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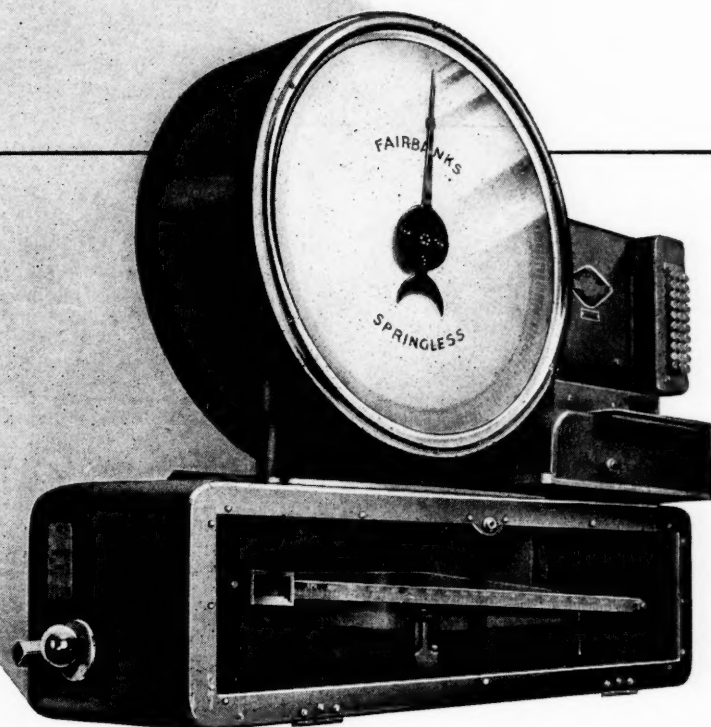
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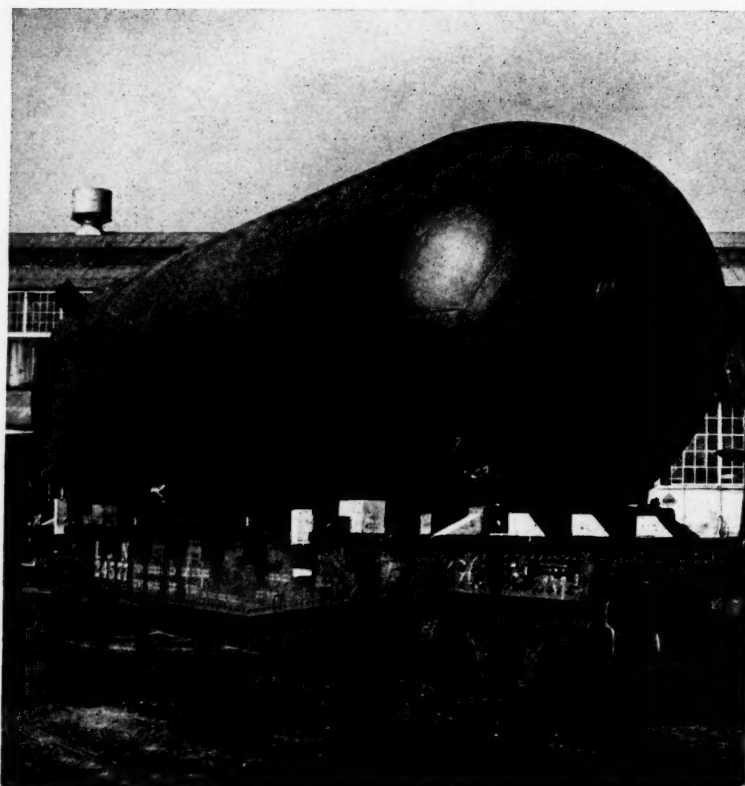
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JULY NINETEEN FORTY-TWO

3



STEEL BULLETS speed the production of explosives—synthetic rubber —and aviation gasoline

In the steel tank and plate work industry, pressure vessels with hemispherical ends are called "bullets." Some are mounted in a horizontal position and called horizontal bullets, while others are supported on end on short posts and are referred to as vertical bullets.

And perhaps the term "bullet" isn't exactly a misnomer, as they are now being used in connection with the "business end" of many a production line. You will find them storing ammonia at chemical plants and munitions works. They provide an economical means of storing oxygen, helium and other gases under pressure. The problem of handling butadiene and other materials used in making

synthetic rubber can be simplified with steel bullets. They can be used for a wide range of services in the manufacture of aviation gasoline.

We have facilities for x-raying and stress-relieving bullets in accordance with Paragraph U-68 of the ASME Code at our Birmingham plant. Installations to meet the requirements of Paragraph U-69 of the ASME Code or other specifications are built at all plants.

For larger capacities, we build Hortonspheres in 1,000 to 20,000-bbl. sizes for pressures from 20 to 100 lbs. and Hortonspheroids in standard capacities of 2,500 to 120,000 bbls. for pressures up to 35 lbs. per sq. in.

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HORTONSPHERES—Built in capacities of 1,000 to 20,000 bbls. to store volatile liquids under 20 to 100 or more lbs. per sq. in. pressure. Also from 20 to 65 ft. in diam. to store gases under 20 to 100 or more lbs. per sq. in. pressure.

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HEMISPHEROIDS—Built in capacities up to 20,000 bbls. for storing liquids at low pressures.

PRESSURE VESSELS—Refinery towers or plain pressure vessels built at Birmingham to Paragraph U-68 of ASME Code with joints x-rayed and stress-relieved and Paragraph U-69 or API-ASME vessels at other plants.

WIGGINS PONTOON ROOFS—Installed on new or existing oil tanks. Ride directly on surface or liquid in tank. Used to reduce fire hazard and evaporation loss on working tanks. Bulletin entitled *The Wiggins Pontoon Roof* contains complete details.

WIGGINS BREATHING ROOFS—Prevent evaporation loss from standing oil storage tanks kept full or nearly full. Installed on new or existing tanks. Recommended for 60 ft. diam. or larger. Bulletin describes construction and operation.

WIGGINS BALLOON ROOFS—Flexible roof like Breather except with greater capacity. Used for smaller sizes, slow working tanks and to connect to other tanks. Complete description in bulletin entitled *Wiggins Breather Roof and Wiggins Balloon Roof*.

ELEVATED STEEL TANKS—Provide gravity water pressure for general service or fire protection. Bulletin entitled *Fire Protection* contains general data and tables of standard capacities from 5,000 to 500,000 gals. for ellipsoidal-bottom and hemispherical-bottom types. Bulletin entitled *Radial-cone Bottom Elevated Water Tanks* contains illustrations of tubular and structural column radial-cone tanks in large capacities. This design used for capacities of 500,000 to 2,000,000 gals. for municipal service with 25 to 35 ft. range in head.

STORAGE TANKS—Flat-bottom tanks with cone or special roofs for the storage of oil, water or other liquids. *Technical Bulletin Number 11* contains complete table of standard barrel capacities for oil tanks, standard gallon capacities for water tanks and A.P.I. designs.

STEEL PIPE—Welded steel pipe 36-in. diam. or larger in standard lengths up to 60 ft. Penstocks, hydraulic pipe lines and tunnel liners built to special designs.

SURGE TANKS—Johnson differential surge tanks, described in booklet sent on request, or simple surge tanks.

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Volume 111, Number 7

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MANUFACTURERS RECORD

Devoted to the Upbuilding of the Nation Through the Development of the
South and Southwest as the Nation's Greatest Material Asset

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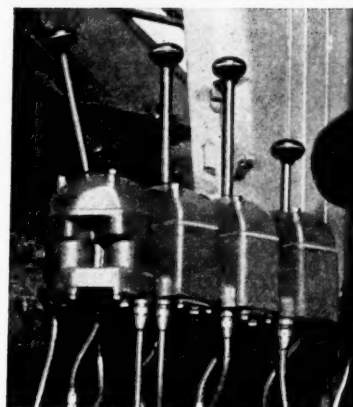
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Westinghouse "FLEXAIR" Valves



Facilitate Remote Pneumatic Control

Invaluable for factory, construction, excavating, oil well, or marine equipment... They help increase productivity of machine tools, activate hoists, shovels, and derricks, speed up drilling operations, and make boats more maneuverable.

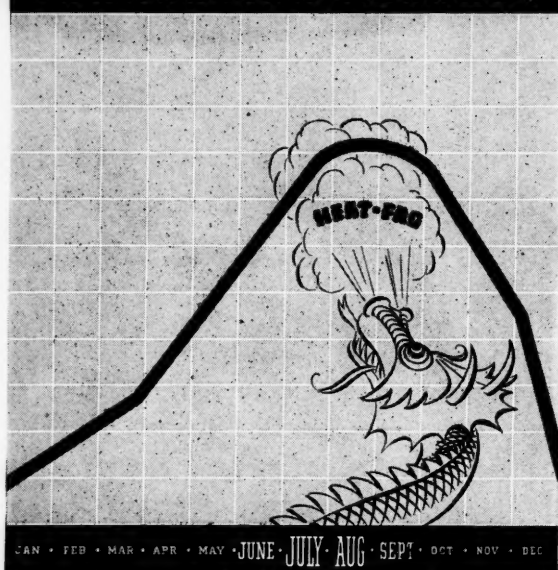
These valves are positive, extremely flexible, easily manipulated, and versatile. Made in a variety of forms for remote control of a single, or several functions, in the operation of clutches, mechanical movements, or other devices. The illustration shows a group of four "Flexair" valves controlling a multiplicity of interlocked functions on an excavating machine.

Scores of varied types of applications have proved the merits of Westinghouse "Flexair" valves. No doubt there's a control problem that these valves can solve for you. And you'll want also a Westinghouse compressor, tank, operating cylinders, "Savair" cocks, etc., to make the installation complete. Write us for such information as will serve your needs.

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Accident-conscious men of industry look anxiously to the hot months — months when men sweat most — when ever-lurking Heat-Fag takes its heavy toll. It is a fact that as the heat curve goes up, so does the accident rate. For, workers who sweat lose body salt. Unless it is replaced — fatigue sets in. Vitality is sapped—men become inalert... and that's when accidents happen... and when man-hours are lost. For, Heat-Fag and accidents ride together!



QUICK DISSOLVING (less than 30 seconds) This is how a Morton Salt Tablet looks when magnified. Examine one—see how soft and porous it is inside. When swallowed whole — with a drink of water, they dissolve in less than 30 seconds.

Wherever workers sweat, Salt Tablets are needed, for they represent the simple, easy way to replace salt that's lost through sweating and hot work.

Case of 9000 10-grain salt tablets **\$2.60**

Salt-Dextrose Tablets, case of 9000 **\$3.15**

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MORTON SALT CO., Chicago, Ill.

EVERYONE WHO SWEATS NEEDS SALT

FREE Sample Tube Write—on your firm letterhead — for a pocket-size sample tube of Morton's Salt Tablets and for the new folder — "Heat-Fag and Accidents Ride Together."



AVOID HEAT-FAG—USE
MORTON'S SALT TABLETS



Place MORTON'S DISPENSERS at all Drinking Fountains

They deliver salt tablets, one at a time, quickly, cleanly—without waste. Sanitary, easily filled, durable. 500-tablet size, \$3.25. 1000-tablet size \$4.00

Things that interest us

THE public has been accused of being too complacent, too apathetic toward the war. The fact is the public sees things in a different light from that which guides the professional politicians. The public is confused. This summer of 1942 has become a time of doubt and questioning and of longing for confidence withheld.

It is also true the public is bewildered by the confusion at Washington; the contradictions in policies and edicts announced by bureaus; the warnings of shortages from razor blades to the possibility of having automobile tires requisitioned.

The people of this country are fighting and will fight and give a good account of themselves. There need be no misapprehension about that. As Dr. Gallup has said, the public is far in advance of Congress in its thinking, and has been for a long time ready to sacrifice for what was regarded as bound to come. If the people's wishes had been followed there would have been more ships, more airplanes, more of everything for war's arsenal long ago.

But the people sense the fact that our national affairs are not being conducted by people motivated solely by patriotism. They sense a spirit of selfishness and of political maneuvering. They question the vast sums of money still being spent for folderols.

On top of all this they see the disintegrating effect of the confusion in Washington caused by bureaucrats holding fast to impractical ideas that they think must survive even if our chances of success in the war are further endangered.

American people are willing to sacrifice. They have given up sons, husbands and brothers. They are willing to make other sacrifices as required. But when they read the announcement that special rations of gasoline are to be allowed to those who haul voters to the polls on election days they are outraged. There is no complacency about that at any rate. In its place there is indignation and doubt about the sincerity and ability of those who are running the country at such a critical time.

A day of reckoning is coming as it should come and will come. Indignation is mounting. Some people are going so far as to say that the aggressiveness necessary to bring victory in the conflict is being held up until after the elections.

While some confusion is inevitable in the gigantic effort to outfit the world as well as ourselves with war's equipment, the people see no adequate excuse for what they meet at first hand when they go to Washington for information or to offer their services. They see the waste involved in red tape, the growing army of jobholders without experience, and the ineptitude and incapacity of those in charge at important posts. Some of these so-called executives

MANUFACTURERS RECORD FOR

are frank enough to admit to visitors their inefficiency and to say that they don't know why they are placed where they are. Different authorities contradict one another and issue confusing orders.

This is not a criticism of our armed forces or of the conduct of our military and naval affairs, but it is a criticism of governmental politics and incompetence, which, together with domestic propaganda must be thrown out if the American people's confidence is to be retained and retained it must be at this time.

IN the eyes of the federal government street car motormen and conductors have now joined elevator operators as employees engaged in interstate commerce because they are engaged in hauling other workmen to their work in plants that are engaged in interstate commerce.

The National Labor Relations Board has recently "accepted" jurisdiction over a minor dispute between the Baltimore Traction Company and its employees on the grounds stated.

We suppose that the next step in the ever logical reasoning of our thoughtful administrators and wise and just courts will be to determine that bootblacks are engaged in interstate commerce because they shine shoes that are worn by workers engaged in interstate commerce. And how about barbers? Most workers get haircuts and occasionally a barber can be found who has "stuck his employer's neck out" by shaving a man from another state.

By the same process of reasoning we suppose that a dairy that receives all of its milk from within the borders of its own state and serves customers only in its own state in bottles made in the state and sealed with caps made in the state should be declared to be in interstate commerce because its products help to keep life in the man who is on his way to a job that produces a label locally made that is to be placed on a can, also locally made, that will eventually contain merchandise sold in interstate commerce.

Why should we continue the fiction of supposing that our government is a federation of states? It is no such thing now. It is a national government with 48 administrative districts.

A politician is a man, or woman, who follows public opinion. A statesman is one who leads it.

It seems as though Congress was organized into a politician's union exercising jurisdiction under closed shop rules. How else can the paucity of statesmen be explained?

You know, at that, there may be something in this fool idea of a Congressional Politicians' Union operating as a closed shop. Doesn't the big boss threaten to kick out of the union—purge is the word now in common use—any member who refuses to accept orders?

(Continued on page 8)



Since the world was plunged into war, the American railroads have handled the biggest transportation job in their existence. They have come through with flying colors.

But in the months to come, as this nation's production of war materials breaks all world records, the transportation job will grow steadily bigger and more formidable. The railroads will be called upon to move the greatest volume of freight in history, including the vast tonnage being shifted from water and highway. It is a job that will require every spark of ingenuity, ability and efficiency of railroad management and men. Above all, it is a job that will demand the utmost cooperation between the railroads, shippers and receivers, and government, in the complete utilization of every railroad facility.

Because the railroads will be allowed only a moderate number of new cars and locomotives: Every railroad car must be loaded quickly. Every car must carry a capacity load. Every car must be properly consigned and carefully handled. Every car must be moved swiftly to destination. Every car must be unloaded promptly and released immediately. In short, every foot of car space must be used; every minute must be saved. These common-sense practices are vital to the war effort. Carry them out — for Victory and Peace — with flying colors.



PRODUCTION and PROTECTION



VALVES
HYDRANTS
and
PIPE LINE
ACCESSORIES



The high quality and dependability of M & H products play an important part maintaining maximum production of war materials in many manufacturing plants. M & H products are equally important for adequate protection of plants and factories against the increased fire hazard of war emergencies. A reserve supply is good insurance.

M & H GATE VALVES are cast iron body, bronze mounted, with double-disc parallel seat or solid wedge top, non-rising stem or outside screw yoke. They come either with flanged or screwed connections. Valves for fire protection lines are marked "WA-FM" to denote approval of both the Underwriters and the Factory mutuals.

M & H FIRE HYDRANTS are revolving head, dry top, bronze mounted. They also are approved by "UA-FM". Entire main valve assembly is removable through barrel without digging. Special Traffic Model is fitted with breakable bolts and stem coupling, designed to break at ground line under impact. Repairs are made simply by renewing bolts and coupling, without shutting off the water.

M & H PRODUCTS INCLUDE

FIRE HYDRANTS
GATE VALVES
TAPPING VALVES
WALL CASTINGS
SPECIAL CASTINGS
TAPPING SLEEVES
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MUD VALVES
VALVE BOXES
FLAP VALVES
SLUDGE SHOES
FLANGE AND
FLARE FITTINGS
FLANGED FITTINGS
B & S FITTINGS
CUTTING-IN TEES

**M & H VALVE
AND FITTINGS COMPANY**

ANNISTON, ALABAMA

Things that interest us

(Continued from page 7)

HOW practical and fair to all of the American people is an income tax collected weekly, or monthly from payrolls?

Who is going to collect it from the farmer, the lawyer, the doctor or dentist, the partner in a partnership who draws no salary, the family run corner store owner or for that matter the labor leader? Its burden falls only on the workers of organized business.

Where are the brains that we elected to represent us? Are they only loud speakers for half baked law school clerks?

A sales tax is democratic. Its effect is deflationary. Pay or save.

THE railroads of the nation are doing a magnificent job of handling the enormous amount of freight, the distribution of which is vital to the industrial machine of America. Distribution of raw materials and finished products is only a part of the freight problem. Delivery of thousands of different individually manufactured or fabricated items to a focal assembly plant according to prearranged plan and **ON TIME** requires all of the ingenuity of railroading genius and is a vital factor in unimpeded production.

Railroads do not think in terms of freight cars. They think in terms of ton miles, so many tons carried so many miles in so many hours. Time spent in loading or unloading a freight car reduces the ton miles carrying capacity of that car. Since it is ton miles that count every shipper and every receiver of freight can help the railroads continue and even improve their present excellent performance.

WE quote in part from a letter recently received from the president of an operating coal company in the Pocahontas field in West Virginia:

"Unfortunately, it looks as though John L. Lewis is going to insist upon the miners taking their vacation during the time that you will be here. This, of course, means that there will be very little or no activity in the way of production. The reason for their vacation is that some of the mines last year, during the Captive Mine Strike, collected fines from their men due to sympathy strikes. This was in direct violation of the contract as far as the men were concerned and in accordance with the contract as far as the companies were concerned. However, now Lewis insists that these fines be returned before allowing the men to work through their vacation period. So far, we are holding out against him as a District in the hopes that public opinion will force him to change his mind."

Please notice that, according to this letter, the men have not said that they would not work, the union has not said that they should not work, but John L. Lewis, one man, has said that they must not work.

MANUFACTURERS RECORD FOR

THE article "Airplane Production Goes to War" that appeared in the June issue of the MANUFACTURERS RECORD was so favorably received by our readers that we are printing in this issue another article dealing with another phase of war production—anti-aircraft guns.

These articles are not intended to be technical. Their brevity prevents that. But we hope that they are informative and interesting. If such proves to be the case we intend, from time to time, to publish other articles along similar lines and in similar vein about tanks and ships and other products used in modern war.

WHETHER it is true or not we all like to believe the "I can not tell a lie" story of George Washington and the cherry tree. Whether the story is truth or fiction we all know that George Washington was a truthful man.

In the great beyond, sitting in calm and dignified judgment do you think that Washington is proud of the capital of the nation named in his honor?

Truth and George Washington were one and the same. Truth and the great city that bears his name,—well, read the newspapers or listen to the radio.

WE think that a letter received just as we are closing our jaws to go to press deserves to be included in this column. It expresses the purpose of our industrialists, large and small, to support the war effort. It also is a friendly and considerate explanation to customers who have made a business possible. We wish to commend Mr. Watson and his company. His example is worthy of emulation.

THE SLAYSMAN COMPANY
ENGINEERS - MACHINISTS
Manufacturers of Industrial Gears
Baltimore, Md.

Gentlemen:

We have been glad to devote our facilities, up to the limit of our capacity, to war industry and feel sure that you would thoroughly approve of what we are doing and be glad we are able to do it if it were possible for us to tell you all about it.

But in the meantime, our concentration on machine work, essential to winning the war, is making it increasingly difficult to take care of the needs of our customers in peace time industry and we wanted to make sure you would understand that any delay in repairs, replacements, or other needs which you may call upon us to fill is thru no lack of interest or desire to give you the service you need now, perhaps more than ever, but that it just isn't possible to do any better.

If we had ten times our present capacity, we believe our facilities would then be overtaxed.

Just the same, call us for what you need and we will put your orders through as soon as is humanly possible. That is not saying much but we will do our best and are sorry it is not better.

Yours for Victory

And a return to normal soon.

THE SLAYSMAN COMPANY,
Ray V. Watson,
President.

JULY NINETEEN FORTY-TWO



Layne Quality Has Set A World Standard!

Efficiency, Ruggedness and Long Life are the three outstanding and world recognized features of Layne Well Water Systems. Those features are the result of more than sixty years of water producing experience, specialized engineering skill and ceaseless endeavor to build better pumps and wells.

Thousands of Layne Well Water Systems are now serving, and have long served leading industrial plants, railroads, irrigation projects and municipalities throughout the United States and the Dominion of Canada. Hundreds also, are in use in foreign countries throughout the world.

Each Layne installation is designed and custom built to fulfill its particular task—the production of the largest quantity of water at the lowest possible operating cost. Various parts of the systems; pumps and component pump parts, motors, etc., are of standard manufacture and dimensions. Thus, repairs or replacements, when required, may be made at minimum cost. Each system is completed as a unit, then thoroughly tested and delivered in operation.

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Layne-Western Company of Minnesota.....	Minneapolis, Minn.
International Water Supply, Ltd.....	London, Ontario, Can.

WORLD'S LARGEST WATER DEVELOPERS



TO PLANT SUPTS.

This is one of a series of ads addressed primarily to new grinder hands. If you would like additional copies without our signature, for your bulletin board, tell us how many you need.

How to get better and longer service from your grinding wheels...

● The war imposes a double task on industry and a patriotic responsibility on grinder hands. Speed of production has to be increased, without waste of basic materials. With grinding playing such an important part in production, these simple rules may help you do your job better!



1 USE THE RIGHT WHEEL IN THE RIGHT PLACE

Given data on the type of grinding job, the character of metal to be ground, the amount of stock to be removed and the finish desired, a grinding wheel manufacturer can give you a wheel in the right grit, grade, grain, bond, shape and size to meet definitely your grinding conditions—a wheel that will last longer, do better work at reduced grinding costs. And sales engineering service will help you to select the right wheel for every job.



2 MAKE SURE YOUR GRINDING SET-UP IS RIGHT ON EVERY JOB

Manufacturer's recommendations should be carefully followed on wheel speed, work speed, proper coolant, wheel traverse, rate of infeed etc. Only the correct balance of these factors gives you the full advantage of properly specified wheels. One of the services performed by grinding wheel sales engineers is to check your grinding conditions on the job and point out the best method of carrying out the grinding operation.

THE CARBORUNDUM COMPANY • NIAGARA FALLS, N. Y.

(Carborundum is a registered trade-mark of and indicates manufacture by The Carborundum Company)

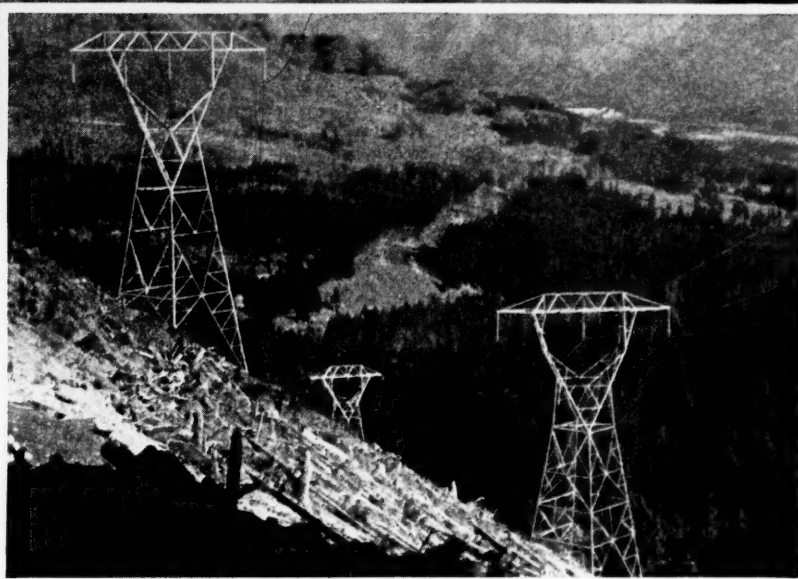
HELPING TO PUT POWER RESOURCES TO WORK FOR WAR PRODUCTION

AMERICA is fortunate to have entered this war with so many key power projects complete or near-complete. Throughout the nation, as gigantic new war plants have sprung from open fields, production has been sparked into swift activity by a ready source of electrical energy. Whatever the source of power—whether steam or hydraulic—the important thing is it's *ready* to help industry equip and maintain a victorious fighting force.

Fabricated steel structures built by American Bridge are helping to put power resources to work for war production.

Hundreds of steel gates of all types—tainter, rolling, lift and swing—are impounding the waters of many rivers. They harness the flow to control floods, extend navigation to upper reaches, and generate electrical energy.

Thousands of steel towers dot the



continent, carrying power lines that radiate from sources of energy to industrial communities and to essential war industries that have mushroomed throughout all sections of the nation. These transmission towers were designed to carry heavy-duty power lines under extreme climatic conditions and to traverse every imaginable type of terrain—deserts, valleys, plains and mountains. Their efficiency has been

tested by subjecting full-size “pilot” towers to duplicated field loading conditions in our Test Frame, the largest in the country.

Just as many of the projects we have completed in recent years are serving the war effort in various ways, now all of our resources of equipment, engineering talent, and specialized “know how” are active in projects directly essential to war.

AMERICAN BRIDGE COMPANY

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UNITED STATES STEEL

TIMELY WARTIME HELPS FOR BURROUGHS USERS

For many years Burroughs users have profited by the various services that Burroughs provides to help them get the most out of their Burroughs equipment. Today, under wartime conditions, these services are more important than ever.

Thousands of Burroughs users are taking advantage of these services to prolong the life of their present equipment, as well as to meet the increasing demands and changing requirements of today's accounting.

BURROUGHS ADDING MACHINE COMPANY
DETROIT, MICHIGAN

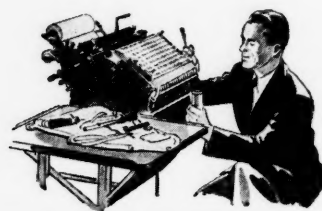
Burroughs

[[FOR VICTORY—BUY UNITED STATES
WAR SAVINGS BONDS AND STAMPS]]



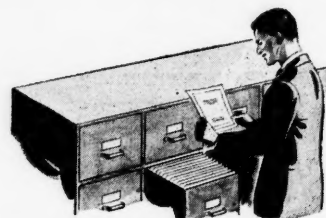
ADVISORY SERVICE

Burroughs representatives, trained and experienced in machine systems and installations, are fully qualified to suggest time-saving short-cuts . . . to counsel with users in meeting today's accounting requirements with their present Burroughs machines.



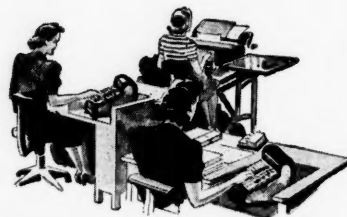
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Burroughs' own salaried, factory-trained, factory-controlled service men inspect, lubricate and adjust Burroughs machines. They make repairs and replacements with genuine Burroughs parts. Their work is guaranteed.



INFORMATION LIBRARIES

Every local Burroughs office is kept supplied with the latest information on how Burroughs machines are being used to meet today's increasing and changing accounting requirements. This information is always available to Burroughs users.



OPERATOR INSTRUCTION

Burroughs renders timely and valuable assistance by showing operators how to make full use of the many time-saving features and advantages that are built into Burroughs machines.

A black and white photograph of a large industrial processing plant. The image shows a complex network of pipes, valves, and large cylindrical tanks. In the foreground, a large horizontal cylindrical tank is prominent, with various pipes connected to it. The background shows more industrial structures, including vertical pipes and overhead walkways, all set within a large, dark industrial building.

New Processing Plants

Wartime Research has developed the need for many new types of Continuous Processing Plants.

We design, build and equip them complete, ready to operate . . . with one organization and one responsibility.

If you are interested and your problems are involved in the war economy . . . we can help you.

**The H.K.
Ferguson
Co.**

ENGINEERS AND BUILDERS

CLEVELAND • HOUSTON • NEW YORK



| **IMAGINEERING**

..also a word to practice on payday

FOR SEVERAL MONTHS, now, we have been suggesting how Imagineering by industry can create the new products that will make the millions of new jobs needed when this war is over.

But Imagineering is a personal word, too.

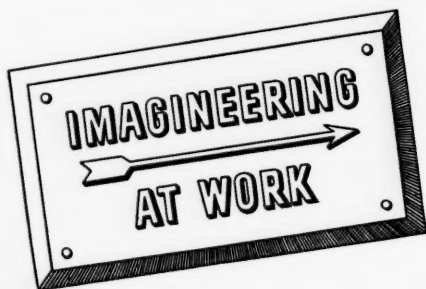
We defined it once as the art of deciding where you go from here.

Individuals have that decision to make also. What the individual does with his share of the 30 billion dollars that represents the excess in spendable income over goods available for purchase—what you do with your share, affects your personal future three ways.

If you put it in War Bonds it finances the war. It prevents inflation. Those are two of the best reasons in the world. But there is still a third. You actually start *today* to buy the *tomorrow* of revolutionary new products that are being readied by industry.

Imagineering by industry is a fact. It has made war production what it is. It is incubating a bright new world. And the family with War Bonds in the safe is the family that will have the cash to buy their share of what that world has to offer.

ALUMINUM COMPANY OF AMERICA, 2109 Gulf Building, Pittsburgh, Pennsylvania.



ALCOA ALUMINUM



MANUFACTURERS RECORD FOR

FIGHTING FIRES before they start

Most fires are preventable. A smoldering cigarette, flipped carelessly into a dark corner . . . a welder's spark flying unnoticed into a pile of oily waste—these little things can, and do, start devastating fires.

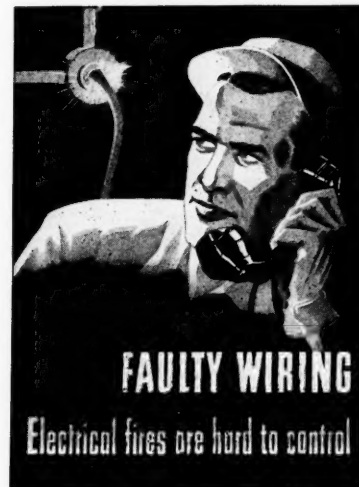
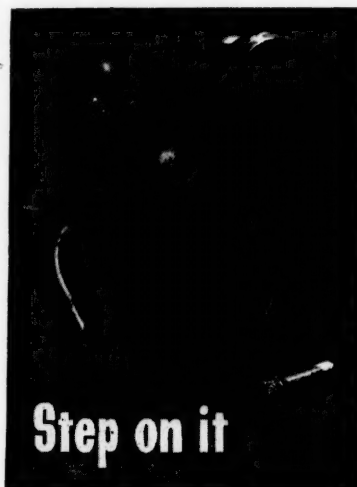
At the beginning of the war emergency, recognizing that fire is a treacherous and deadly saboteur of production, Bethlehem intensified its attack on the fire hazard. As always,

trained, fully-equipped fire-fighting forces supplied the backbone of the fire-control effort, maintaining day-and-night vigilance in every Bethlehem plant and shipyard.

But to bring home the vital importance of fire prevention and control to every Bethlehem employee, we've designed a series of posters in full color and are displaying them in key locations throughout all Bethlehem

shipyards and steel plants, which are now engaged in vital war work.

These posters are based on analysis of the most serious causes of fire and the all-important part of the human element in fire prevention. By pointing out to employees specific ways in which they can prevent or subdue fires, the posters are helping to minimize a potentially grave threat to the production of war materials.

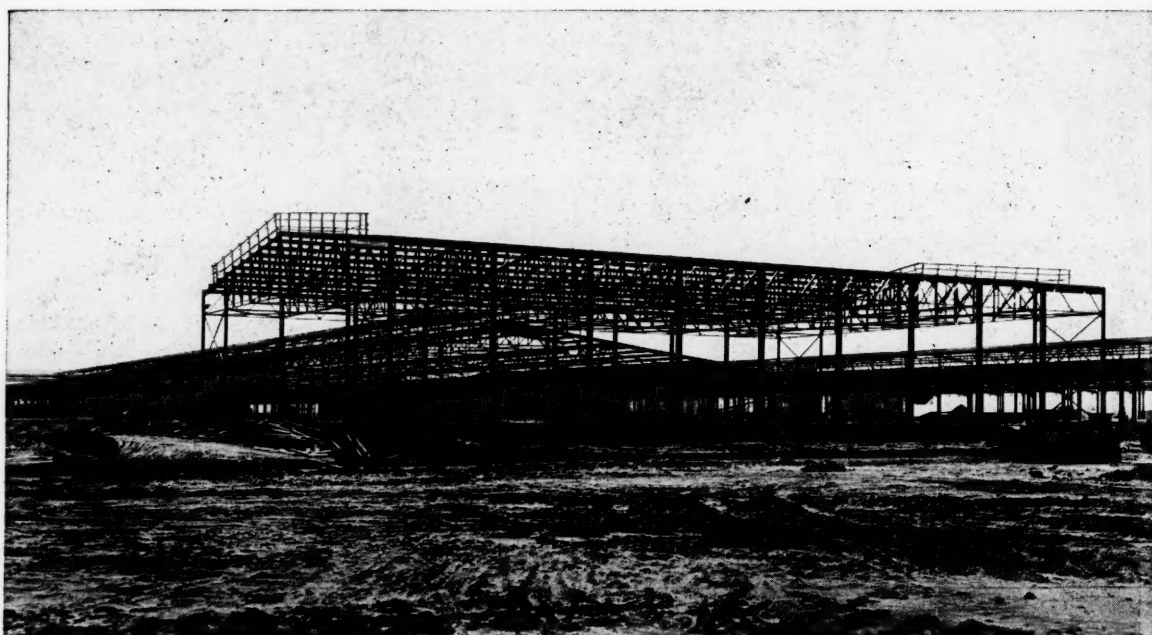


Five of Bethlehem's series of fire-prevention posters. These posters are printed in full color. Each poster is designed to emphasize a specific problem in fire prevention or control.



War-production plant executives who are carrying on fire-prevention campaigns may find these posters of interest. A complimentary set will be supplied on request to Bethlehem Steel Company, Bethlehem, Pa.

A 3-Plant Advantage



Another unit in an important construction program

When Two or Three plants gang-up on a job it moves

Three plants strategically located, operated in complete coordination under the direction of one compact and experienced organization, is a Virginia Bridge structural steel fabricating advantage.

Multiple-plant (we call it split fabrication) scheduling for simultaneous fabrication is used when the steel tonnage involved and the requirements of the job demand unusual performance. It is literally a gang-up of men and facilities for quick results. Many of today's important construction projects throughout the South, Southeast and Southwest are moving faster because of this 3-plant advantage.

Virginia Bridge

**STEEL STRUCTURES
ALL TYPES**

Plants:

Roanoke, Va.

Birmingham, Ala.

Memphis, Tenn.



VIRGINIA BRIDGE COMPANY

(South's Largest Structural Steel Fabricator)

Roanoke

Birmingham

Atlanta

Memphis

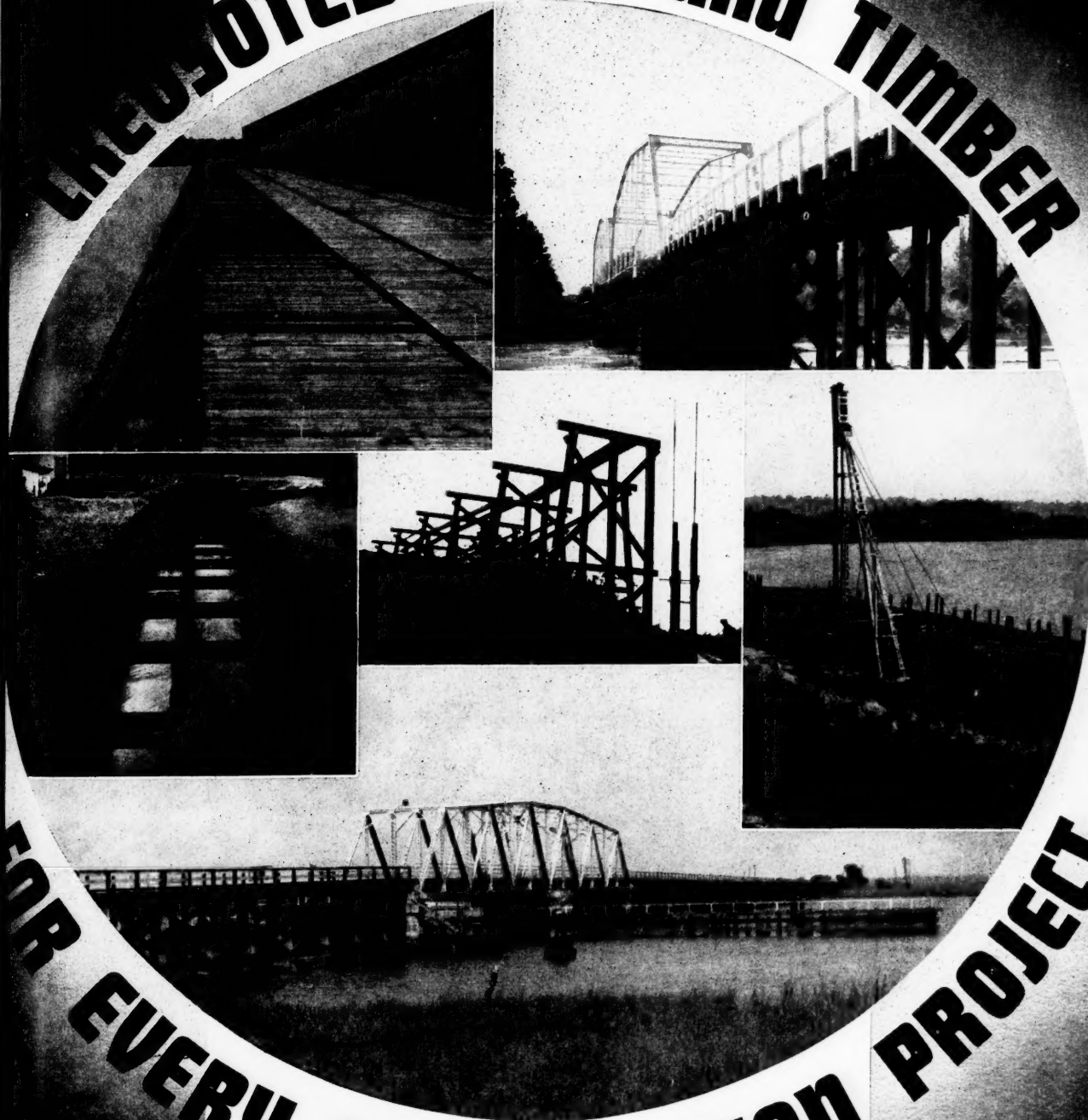
New York

Dallas

UNITED STATES STEEL

AMCRECO

CREOSOTED PILES and TIMBER



FOR EVERY CONSTRUCTION PROJECT

AMERICAN CREOSOTING COMPANY

INCORPORATED

COLONIAL
CREOSOTING
COMPANY
INCORPORATED



GEORGIA
CREOSOTING
COMPANY
INCORPORATED

ADDRESS INQUIRIES TO CHICAGO, ILL., OR LOUISVILLE, KY.

Faster Production **V** *for Victory*

**...Often Means That Your Plant
Must Control Its Own Weather!**

**Celotex Vapor-seal Roof Insulation and
Celotex Bonded Built-Up Roofs are Important Factors
In Controlled Temperatures and Humidity**

WHETHER you are enlarging your plant to speed production for victory, or remodeling it, or both—you will be devoting special attention to its most vulnerable exposure—the roof.

By placing Celotex Vapor-seal Roof Insulation between your manufacturing processes and outside heat or cold, you facilitate the control of temperatures and humidity which are so often essential to maximum production speed. And, in northern climates, you materially reduce heating costs!

By using Celotex Bonded Built-Up Roofs, you are assured of guaranteed protection against repair expense for either ten, fifteen, or twenty years.

Write for the name of your nearest Celotex Roofing Contractor.

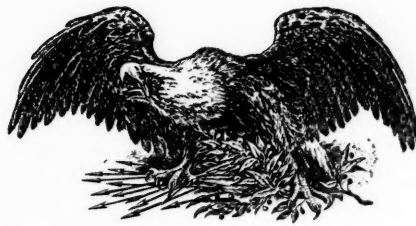


VAPOR-SEAL ROOF INSULATION

BONDED BUILT-UP ROOFS

The word Celotex is a brand name identifying a group of products marketed by The Celotex Corporation.

THE CELOTEX CORPORATION • CHICAGO



PATERNALISM OR REPRESENTATIVE GOVERNMENT

There are only two basic forms of government, one where the government controls the people and one where the people control their government. The first may be called tyranny, despotism, feudalism, paternalism, or any of the isms invented during the past twenty-five years, but they are all based on the same idea — the idea that people do not know enough to manage their own lives.

The second, representative government, is based on the premise that people do know enough to run their own lives and, for that reason, are capable of managing their relations with each other. In other words they are capable of governing themselves as a political and social group. If this is not true, then representative government as we have known it in this country is a fallacy and will not work.

But it has worked for more than a hundred and fifty years. It has worked through a war that temporarily tore our states in half. It has succeeded in welding us into a unified nation with one purpose that knows nothing about section, race or

creed. Where is the dictator who can say the same for his country?

Oil and water will not mix, neither will paternalism and individual freedom. Patrick Henry was not thinking in terms of social security when he said "Give me liberty or give me death." He was thinking of Patrick Henry the man, who asked only for the opportunity to use the inherent gifts that God had given him and that he with his independent spirit would be able to develop. Patrick Henry was a man, not a serf or a slave seeking security.

Alive today are plenty of men like those of 1776. They are men who are doing things, not asking for them. They are in our armed forces. They are in our industries. They are on our farms. They do not want help from the powers that be. They want to be a part of the powers.

Wake up America. Representative Government is at the crossroads.

WHERE OUR RUBBER IS GOING

WHEN the Japanese reached southward through the Pacific, when Japanese soldiers overran Malaya and the Netherlands East Indies, when Japanese warships placed themselves athwart the communications lines leading from the Far East to America, they did more than cut off the source of 98 per cent of the rubber consumed every year by the U. S. A. When the Japanese did that, they cut off the source of virtually all rubber consumed by the United Nations.

We consumed 50 per cent of the world's output of rubber and produced hardly any. In that, we were like our friends and allies. They did not use nor did they need so much rubber as we, with our vast system of highways and our 34,000,000 motor vehicles, but they, too, used rubber and they, too, produced hardly any. They, like us, were almost wholly dependent on the South Pacific lands for their supply.

By far the greater amount of the

rubber needed by the United Nations during 1942 must be supplied by the United States. We shall have to supply great quantities of crude rubber for our own minimum military requirements this year. In addition we shall have to supply rubber to fill lend-lease commitments—pledges to meet the pressing needs of our allies. Another stock of rubber is allocated to a variety of purposes, including supplies destined for the sister republics in this hemisphere. And finally, whether they can be met or not, there are minimum civilian requirements to be considered.

The 1942 requirements of the other countries in the United Nations group are large. The United Kingdom requires rubber to be fabricated into barrage balloons to protect English cities from Nazi bombers, to go into the treads of British tanks, to supply tires for the fighting aircraft of the R. A. F. in its raids over Axis-held Europe. Canada, which had built up some-

thing of a reserve, will need additional rubber and the other dominions will need some. Russia's minimum requirements add to the staggering total minimum needs.

It is against this huge demand that we must place the total world supply, actual and potential, a supply which not only must meet the needs of 1942 but must somehow be made to last until we can get adequate production of synthetic rubber and substantially greater imports from Latin America.

To be sure, there is one source of rubber aside from the scant contribution of Latin America and of Africa, which will help meet some of our requirements—reclaimed rubber. This rubber, reprocessed in plants equipped for that purpose, makes our stock pile of rubber about 30 per cent larger than it otherwise would be.

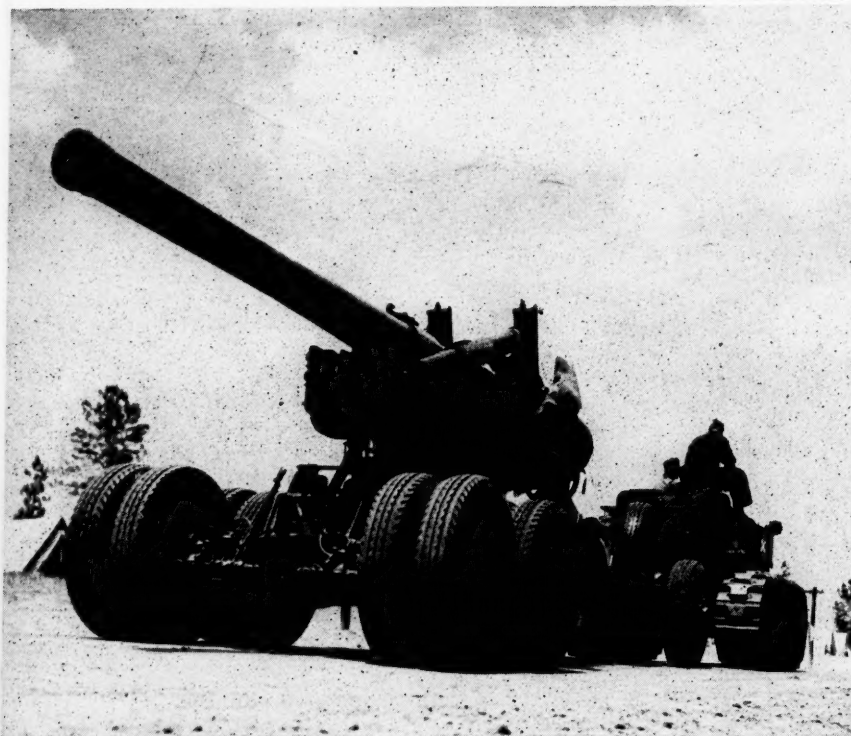
Reclaimed rubber, however, can be used only for a limited number of purposes unless it is fortified with crude rubber. But it is still important that we get as much of this rubber off the scrap heaps and back to the processing plants as we possibly can—important because our military needs require every pound of every sort of rubber we can scrape up.

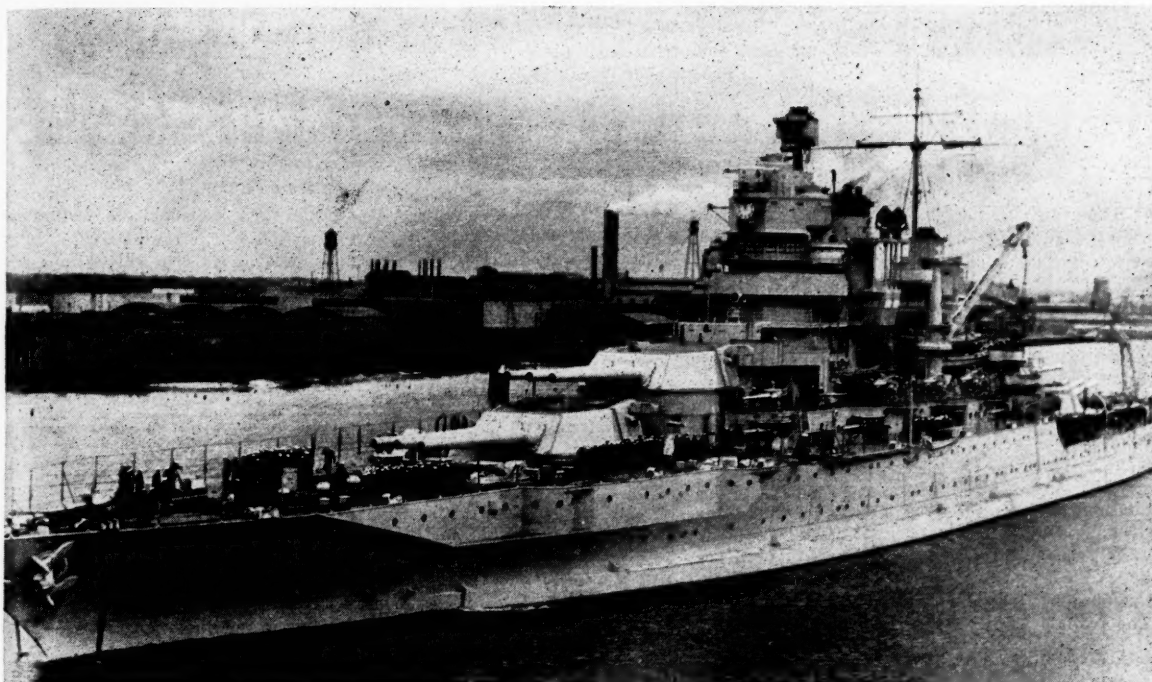
Just as few Americans were aware of the importance of rubber in their daily lives, although they rode on it every day to their work or to their pleasure, so few Americans realize the prodigious military demand for rubber.

It is obvious that today's mechanized armies roll forward on rubber, that the bombers soaring against the Japs spring into the air from rubber wheels, that our tanks and the tanks of our allies lumber toward the enemy on rubber tracks, but there are other

The Army's use of rubber for tires is understandable to us because we are familiar with such things, but large quantities of rubber are utilized for far less obvious needs such as the 175 pounds required in the carriage of a 75 MM gun while each scout car uses 398 pounds of raw rubber.

(Photo by U. S. Army Signal Corps)





Most of us think of a battleship in terms of so many tons of steel, yet in each one of these Navy monsters there is at least 75 tons of rubber, or the equivalent of 17,143 automobile tires.

military uses of rubber quite as great—although less apparent.

Into every new battleship of our expanding Navy goes at least 75 tons of rubber, or the equivalent of 17,143 automobile tires. There are many other military uses of rubber which do not involve wheels or tracks. A single 10-ton pontoon bridge, for instance, eats up 3200 pounds of rubber and 0.02 pounds are used in each roll of adhesive plaster made for the Army's medical corps. Assume that the Army were to buy 1,231,224 rolls of adhesive plaster (that was the Army program many months ago, a program which like everything else has changed since then) the purchase would have represented 24,624 pounds of rubber.

There is more than two pounds of rubber in every army raincoat, and every man in the army must have a raincoat. Into the carriage of a single 75 MM gun goes more than 175 pounds of rubber. Before you can have a scout car you must first have 398 pounds of new rubber, and tires for our fighting aircraft consume from 33 to 96 pounds, depending on the size of the plane (inner tubes: 24 to 54½ pounds).

Rubber is used to bullet proof the gasoline tanks in fighting aircraft, and because they are made from a

petroleum or coal tar base, synthetics are even better than natural rubber for this purpose. To bulletproof the gasoline tank on a Flying Fortress, to so line that gasoline tank that an anti-aircraft missile may tear through it without bringing the plane to earth or setting it afire, requires 1246 pounds of rubber. There is 29 pounds of rubber in those pneumatic rafts carried by our long range bombers against the hazard of a forced landing at sea and such rubber rafts have saved the lives of military and naval flyers, including some of our own. There is almost two pounds of rubber in any army gas mask.

To sum up, rubber is as necessary to modern war as steel, and while we have lots of steel we have very little rubber. Rubber is used by the ordnance department, the medical corps, the chemical warfare service, and the signal corps. The artillery rolls into action on rubber, even the infantry these days is carried into combat on rubber. And the Navy's needs for rubber are many, too.

Against this need of our fight-

ing men, set this fact: that an average tire—and that average is an average for passenger cars, trucks, etc.—uses up 14 pounds of crude rubber. The four tires on an average auto total about 70 pounds of rubber, and that is just 20 pounds short of the amount needed to bulletproof the gas tanks on an army pursuit plane.

No one aware of these circumstances could continue to maintain that it made no difference how he used his automobile, no one could continue to believe that—somehow or other—rubber would be forthcoming to give him new tires when his present tires are worn out.

Without the essential civilian use of rubber the life of the nation would be partly paralyzed and the flow of war goods to the front—that flow which cannot be permitted to decrease and must be augmented—would be hampered. Rubber on wheels of automobiles transports war workers to their machines and takes the products of their labor to trainside or dock.

The South as the main source of materials, both agricultural and mineral, from which synthetic rubber is produced owes a duty to itself and to the nation to see that the necessary materials are pro-

(Continued on page 48)

RELATIVE SCARCITY of METALS, CHEMICALS and OTHER MATERIALS

THE growing scarcity of metals and chemicals is emphasized in the recently issued report on the relative scarcity of certain materials, including fifty items not previously listed. The materials are listed in three groups, according to the availability of current supplies.

In the first group, the available supply of materials is inadequate for war and essential civilian uses and in many instances the supply is insufficient for war purposes alone. Particular attention is directed to the serious status of steel supplies by the classification with-

in this group of certain steel products marked as "very critical." Civilian industries not essential to the war effort are practically deprived of Group I materials, but can often continue production by substitution of materials in either of the following groups.

Supplies of items in Group II are sufficient for war needs and are available in fair quantities for absolutely necessary civilian requirements. In some instances, the availability is due to restrictions placed on their use for less essential purposes.

The third group lists materials in which the supply is adequate for all

types of present demands, including use as substitutions. However, while supplies of materials in this group frequently exceed demand in one part of the country, deficiencies exist in other parts. Therefore, it must be pointed out that resourcefulness is necessary in getting the items in this group into replacement use for essential military and civilian needs. Also, this may be an important factor in winning the war.

This grouping of materials represents the current situation and may be expected to change again within the next few months.

GROUP I

The available supply of the following materials is inadequate for war and essential civilian uses and in many cases for war purposes alone. *Indicates the most critical items.

METALS

Alloy Iron
*Aluminum
Aluminum Pigments
*Brass
*Bronze
Cadmium
Chromium
Cobalt

*Copper
*Copper Scrap
Iridium
Lithium
*Magnesium
Manganese, Electro
Molybdenum
*Nickel and Nickel Alloys
*Nickel Scrap

Rhodium
*Tantalum
*Tin
*Tungsten
*Tungsten Carbide
*Vanadium
Wrought Iron
Zinc (High Grade)

SUPPLY STATUS OF CERTAIN STEEL PRODUCTS

Very Critical

*Alloy and Shell Steel
*Steel Plates
*Structural Steel and Steel Piling
*Seamless Steel Tubing, 4" and under
*Wire Rope
*Tinplate

Critical

Sheets and Strip
Wire Products
Black and Terne Plate
Rails and Reinforcing Steel
Semi-finished Steel and Forgings
Tool Steel Bars
Pipe

CHEMICALS

Acetone
*Acrylonitrile
Alcohol, Lauryl
Ammonia and Derivatives
Ammonium Cyanamide
Ammonium Sulphate
*Aniline and Derivatives
Anthraquinone Derivatives
Benzol and Derivatives
*Butadiene

Calcium Cyanamide and Derivatives
Cobalt Chemicals
Copper Chemicals
Cresols
Diphenylamine
Glycerol
Iron Oxide, Yellow Hydrated
Mannitol
Naphthalene and Derivatives
Naphthenic Acids and Naphthenates
Pentarythritol

Phenol
Phosphates: Tricresyl
Triphenyl
Phthalic Anhydride and Derivatives
Silica Gel
Sodium Nitrate
Sorbitol
Sulphur Chlorides
*Toluol and Derivatives
Zinc Oxide (French)

MISCELLANEOUS PRODUCTS

Agar
Asbestos (long fiber)
Balsa Wood
Burlap
Cashew Nut Shell Oil
*Coconut Oil
*Copra
Corundum
Cotton: Chemical Pulp
Duck
Linters
Raw, Long Staple
Diamond Dies, fine sizes
Feathers (up to 4"), and Down
(Goose and Duck)

Graphite (Madagascar Flake)
Hemp: Agave Fiber
Henequen
*Manila Fiber
Cordage
Seed
Sisal
Jewel Bearings
Jute
Kapok
Kyanite
Lumber: Better Grades Softwood, ex.
White Pines, Better Grades
Hardwood ex. Gums
Methyl Methacrylate Sheets

Mica, Block
Nylon
Oiticica Oil
Palm Kernel Oil
Phenol Formaldehyde Resins
and Plastics
Pig and Hog Bristles over 3"
Polystyrene
*Polyvinyl Chloride
Pyrethrum
Quartz Crystal
Quinine
Rapeseed Oil
Rayon, High Tenacity
Rotenone

Group I, Miscellaneous Products (Continued)

Rubber, *Chlorinate
*Crude
*Latex
Reclaimed
*Synthetic

Shearlings
*Shellacs
Silicon Carbide
Silk: *Raw
*Noils

Silk: *Garnetted
Reclaimed
Sperm Oil
Teak
*Tung Oil

GROUP II

Materials that are essential to the War industries but the supplies of which are not as limited as those in Group I.

METALS

Aluminum Scrap
Aluminum, No. 12 remelt
Antimony
Bismuth
Calcium
Calcium-Silicon
Columbium
Ferrosilicon

Ferrotitanium
Iron: Gray Cast
Malleable
Mercury
Pig Iron and Scrap
Platinum
Ruthenium
Silicomanganese

Silicon and Alloys
Silver
Spiegeleisen
Steel: Bessemer
Chrome Stainless
"National Emergency"
Scrap
Zinc (Low Grades)
Uranium

CHEMICALS

Acetic Acid
Acetic Anhydride
Alcohol, Amyl
Ethyl
Methyl
Acrylic Acid and Acrylates
Alkyd Resins
Alumina
Aluminum Chemicals
Arsenic Trioxide
Atebrine (for Quinine)
Bleaching Powder
Bromine

Butanol
Butyl Acetates
Calcium Hypochlorite
Chlorates and Perchlorates
Chlorinated Hydrocarbon
Solvents and Waxes
Chlorine
Chromium Chemicals
Citric Acid
Ethers
Formaldehyde

Glycol
Iodine
Isopropanol
Ketones, ex. Acetone
Lactic Acid and Lactates
Maleic Acid and Anhydride
Methyl Ethyl Ketone
Molybdenum Chemicals
Perchlorates
Phosphorous
Soda Ash
Strontium Salts
Kylol

MISCELLANEOUS PRODUCTS

Albumin, Blood
Alpha Cellulose (Wood Pulp)
Babassu Oil
Bauxite, Reduction Grade
Cadmium Pigments
Castor Oil
Cellophane
Cellulose Nitrate, Acetate,
and other Derivatives
Cohune Nuts and Kernals
Cork
Cotton Seed (SXP)
Cryolite
Diamonds, Industrial
Ester Gum
Flax

Fish Liver Oils
Fish Oils
Glues, Animal and Vegetable
Hair, Horse-Tail and Mane
Halogenated Hydrocarbon
Refrigerants
Hides
Leather
Linseed Oil
Magnesite
Mercury Pigments
Methyl Methacrylate
Powder
Mica, Splittings
Molasses
Natural Gas
Natural Resins, except Rosin

Neatsfoot Oil
Palm Oil
Paraffin
Pine Oil
Rayon Filament, Staple Fiber
Rutile
Steatite Tale
Tanning Materials
Tetraethyl Lead
Urea Formaldehyde Plastics
Vinyl Plastics and Resins
Vinylidene Chloride Plastic
Vitamin "A" Products
Vulcanized Fiber
Wool
Zircon

GROUP III

Materials that are available in significant quantities as substitutes for less available materials, and materials that are available in large amounts unless restrictions are imposed by labor, manufacturing, or transportation difficulties.

METALS

Ferroboron
Ferromanganese

Gold
Indium

Lead
Osmium

Palladium
Sodium

CHEMICALS

Barium Carbonate
Borax and Boric Acid
Camphor

Caustic Soda
Chromic Acid for Plating

Muriatic Acid
Sodium Metasilicate

MISCELLANEOUS PRODUCTS

Asbestos, Common
Asphalt
Bauxite, Low Grade
Bentonite
Brick and Tile
Carbon Black
Casein
Cement (Portland)
Ceramics
Charcoal

Clay
Coal and Coke
Coal Tar Pitch
Concrete, plain
Corn Stalks
Cotton, Raw, Up to 1 1/2"
Cottonseed Oil
Diatomite
Emery
Feldspar

Felt, Hair
Fiber Board
Flint
Gilsonite
Glass
Gypsum and Products
Hair: Cattle, Calf and Goat
Invert Sugar
Lead Pigments

(Continued on page 49)

BUILDING DEFENSE PLANTS IN ENGLAND

TWO things still are free in England—light and air.

That's the explanation of C. Howard Crane, an architect living in London but now in this country on a brief trip, in reply to questions regarding the type of industrial plants being built and planned for Great Britain.

Architect Crane, who designs aircraft, munitions, steel and other types of industrial plants for the British government, in referring to free light and air, had in mind current factory black-out problems under bomb-raid conditions. He revealed that few windowless buildings had been built or were contemplated. Plenty of steel sash is still being utilized, he said, or the buildings are so constructed that sash areas can be quickly enlarged.

"Our problems in the building of factories in England are a little different than those you have at the moment," Mr. Crane told a group of American architects, "because we are more exposed to the black-out problem and the effects of bombing.

"All new factories are designed with blast walls and older plants

are now equipped with them in most instances. These walls usually are 14-inch, reinforced brick-work built 8-feet high to enclose every 10,000 square feet of working area, thus providing a series of enclosures something like a ship's bulkhead construction. Such walls not only protect the workmen but the machinery as well and serve to localize the effects of bombs.

"Experience has taught us not to attempt to design so-called bomb-proof roofs except for vital sections, such as boiler rooms, compressor houses and where transformers, switch gear and other equipment vital to plant operation are located.

"For example, we are using a thin asbestos roofing material. This is laid upon a steel framework and clipped to it. When a bomb hits such a roof the resultant explosion rips away the asbestos but usually leaves the steel framework practically intact so that new asbestos roofing can be installed quickly.

"This type of roof has replaced solid or so-called bomb-proof roof

construction because we have learned by painful experience that when a bomb meets with such resistance it blasts and twists steel beams practically into hairpins and causes far more damage and delay than the comparatively 'resistless' type of roof.

"Black-out, of course, is a big problem and a great deal of study has been given this subject. Very few windowless buildings are being constructed. We have found them too expensive to build and operate. We keep in mind that such construction, for one thing, necessitates air ducts, fans, and other mechanical equipment requiring metals that are more urgently needed for other defense purposes.

"Solid walls are particularly dangerous under bombing conditions, and in so far as black-out is concerned, we have found a much more efficient method of construction.

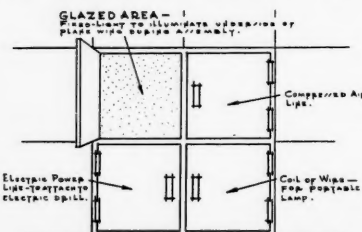
"First of all, exterior walls, to a height of eight feet are of blast-wall design, 14" thick. Experience has shown that the 'splash' of an exploding bomb, scattering missiles, is kept relatively harmless because of the height of the wall.

"Above that height, regular steel sash is used in the walls. Temporarily, about one-third of the sash area is being glazed, the remainder of the panes being filled in with asbestos, so that after the war these panels can be removed and glazed, and the buildings used in a normal manner. We want to utilize natural daylight and air as much as possible. Too, in case of bombings, such walls are more quickly repaired and are cheaper.

"The most effective black-out method is accomplished by painting the glass in fixed sash wall areas black. Windows, to assure ventilation, and light during the day, are not painted but are provided with black curtains. When in use during air raids, the curtains over-lap the painted sash areas six to eight inches around the windows.



Built into the floor at ten foot intervals, the service box has stepped up production in English aircraft plants, according to C. H. Crane, American architect, now living in England and designing defense plants there. Workers are said to handle a job faster through illumination of the under side of plane wings being constructed or assembled as they move along a production line. The other three compartments contain equipment quickly available and easily stowed away when not in use. The light source to illuminate the darkened area under wings, even in the best lighted plants, may consist of any type of flat glass, either diffusing or clear plate. A fixed light is underneath the glass.



Views of an aircraft factory "somewhere in England." The roof area consists of thin asbestos laid upon a framework of steel and clipped to it, for quick replacement in case of bomb hits. The large expanses of fixed sash and monitors to provide an abundance of free light well diffused to reduce glare during normal operations, were painted black. Hinged sash for window ventilation, and a degree of natural light for daytime work under war conditions, are equipped with black curtains. After machinery was installed, 14-in. reinforced brick blast-walls 8-ft. high and enclosing every 10,000 ft. of floor space, were constructed.

"At the outset of war, when the Germans started to bomb our industrial areas, workmen left their places immediately the sirens sounded. In most cases the planes never actually reached the areas in which these plants were located so that many man hours were lost.

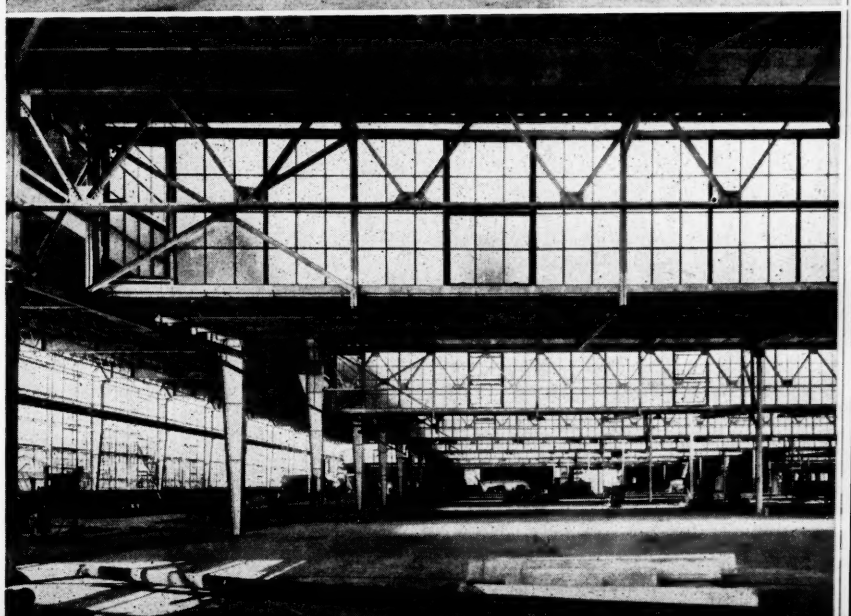
"Now we have roof spotters on constant duty. The first alert usually means that enemy planes are merely heading across the channel and workers keep right on the job. At night, for instance, no individual factory alarm is sounded unless the roof spotter actually sees or hears enemy planes.

"Then the spotter sounds a special klaxon, the workers quickly head for shelters (built under the factories in the newer plants), and all lights then are blacked out quickly by a central control switch. This new system has resulted, of course, in the saving of millions of man hours.

"Incidentally, we have hit upon a Service Box design which we have found very successful for production line floors in aircraft plants, and which might well be incorporated in American plants.

"The service box is usually two feet square, although it can be larger if found desirable. Built flush with the floor, it is in four sections, each with a manually operated door. In one compartment is a coil of power line for attaching to an electric drill. Another section has a compressed air attachment, a third has a portable coil for a small electric light and the fourth compartment is glazed with a diffusing type of glass. Underneath is a fixed light for illuminating the under side of a wing. When a plane being assembled reaches the point where work is required on under-side surfaces, these service boxes, located

(Continued on page 48)



STATUS OF THE PIPELINE PROJECTS

THE obtaining of War Production Board clearance for all pipe line projects formally proposed to date by the oil industry as part of the comprehensive seven-project pipe line relocation program was announced recently.

More than 30 separate undertakings, all told, are involved in the seven-project program, which figures importantly in the effort to step up the movement of oil to the East Coast.

Total cost of the program is estimated to be in excess of \$30,000,000. It is being financed by the industry, with new materials being used only in those instances where second-hand pipe, pumping facilities and other equipment cannot be obtained or employed. It was for the small amount of new materials that WPB clearance was needed.

If early approval can be obtained for all units on which it is proposed to go ahead, the entire program can be completed within six months, it is said, and in three months a majority of the projects will be in actual operation.

The relocation program as now planned is designed to increase the flow of crude oil and petroleum products to the Atlantic Seaboard by more than 200,000 barrels a day. Of this amount, 87,000 barrels will be moved directly to the East Coast by pipe lines exclusively. The remainder will move initially by pipe line to points on the Mississippi and Ohio Rivers and in Illinois and then eastward by tank car and river barge.

Summing up, the present status of the relocation projects and the separate work items involved in each is as follows:

Project One

(Increasing crude oil movement from Texas to Illinois and then East by 41,000 barrels daily, of which 25,000 barrels will be moved out of Illinois by pipe lines and 16,000 barrels by lake tankers and rail.)

All project items have received ratings and work is under way at various points. Project is in three parts and includes following separate undertakings by companies listed:

Part 1: The Texas Pipe Line Company—conversion and reversal of 8-inch crude oil line from Port Arthur to Dallas, Texas; installation of pump station at Waxahachie, Texas; laying 110 miles of 10 $\frac{1}{4}$ -inch and 8 $\frac{1}{2}$ -inch lines between Dallas and Stuart, Oklahoma. Stanolind Pipe Line Company—laying 54 miles of 12-inch line between Graford, Texas, and Healdton, Oklahoma; installation of pump station at Devol, Oklahoma.

Part 2: Shell Pipe Line Company—

construction of 10-inch crossing under South Canadian River between McClain and Cleveland Counties, Oklahoma. Stanolind Pipe Line Company—replacement of river crossing (four lines) under North Canadian River in Pottawatomie County, Oklahoma; construction of river crossing under Missouri River. Ajax Pipe Line Company—laying 10 miles of 10-inch loop lines in Missouri. Texas-Empire Pipe Line Company—installation of pumps and replacement of 11 miles of pipe on Valley Center, Kansas, line; installation of pump stations at Hiattville and Eureka, Kansas; installation of pump station at Centralia, Missouri; laying 32 miles of 12-inch line in Illinois. Stanolind Pipe Line Company—installation of superchargers to increase pumping capacity between Kansas and Illinois.

Part 3: Buckeye Pipe Line Company—installation of pumps at Ellsworth, Mt. Cory and Warren, Ohio. Illinois Pipe Line Company—laying 152 miles of 8-inch line across Ohio. Tuscara Oil Company—conversion and reversal of gasoline pipe line across Pennsylvania between Negley, Ohio, and Bayway, New Jersey. (The reversal has been accomplished already and the line will be converted to crude oil service as rapidly as possible.) Southern Pipe Line Company—installation of pump stations at York, Pennsylvania, and Hancock, Maryland.

Project Two

(Increasing products movement through Plantation Pipe Line between Baton Rouge and Greensboro, North Carolina, by 30,000 barrels daily.)

Project rating obtained for installation of 14 intermediate pumping stations between Baton Rouge and Greensboro on Plantation line. Application expected to be submitted in few days covering construction of 212 miles of 10 $\frac{1}{4}$ -inch and 80 miles of 8-inch second-hand pipe line from Beaumont, Texas, to Baton Rouge to supply approximately 60,000 barrels of products daily to Plantation line.

Project Three

(Increasing pipe line delivery of products to East by 15,000 barrels daily.)

Shell Oil Company has obtained project rating for pump station at Muncie, Indiana. Filing of project application for products pipe line from Fostoria to Akron, Ohio, depends on future developments in connection with studies of al-

ternative methods of moving products eastward. Project rating obtained for reversal of Susquehanna pipe line between Cleveland, Ohio, and Twin Oaks, Pennsylvania.

Project Four

(Increasing products pipe line capacity in East by 32,000 barrels daily.)

Sinclair Refining Company has obtained project rating for completion of products line between Marcus Hook, Pennsylvania, and Steubenville, Ohio. Line as originally planned by company was to have moved products westward, but will move 12,000 barrels of products a day received by barges and rail to East, instead. Keystone Pipe Line Company has completed reversal and conversion of present products line between Pittsburgh and Philadelphia and is delivering 20,000 barrels of crude daily now.

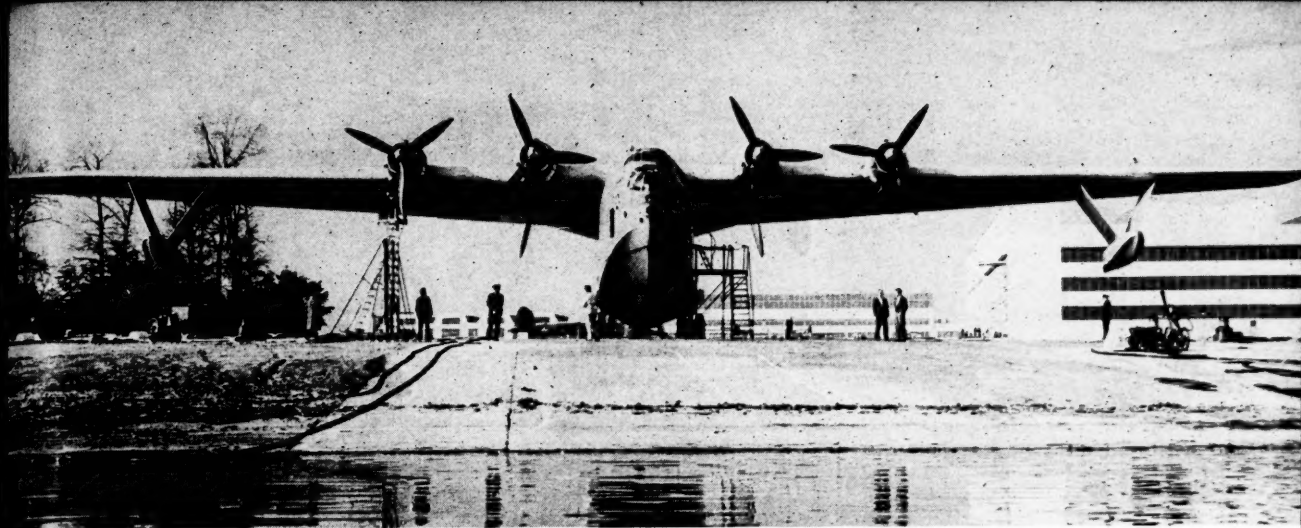
Project Five

(Increasing pipe line delivery of products to Mississippi River at Helena, Arkansas by 55,000 barrels daily, for shipment up the Mississippi and Ohio Rivers by barge to Pittsburgh.)

OPC has approved the project application of Gulf Refining Company for reversal and conversion of present crude line to transport products from Port Arthur, Texas, to El Dorado, Arkansas. Applications expected soon from: The Texas Pipe Line Company for construction of 15-mile extension of its system from Bossier, Louisiana, to Benton, Louisiana, to connect with Magnolia pipe line system at Benton Junction, Louisiana, using 8-inch pipe reclaimed from existing lines, and for reversal of Magnolia crude oil line between Benton Junction and El Dorado; and Project Five Pipe Line Company for construction of 158-mile products line from El Dorado to Helena, using 10 $\frac{1}{4}$ -inch pipe reclaimed from existing lines. Project rating obtained for Humble Pipe Line Company covering installation of complete pump station at Alaureed and Rule, Texas, in order to handle crude now moving through Gulf-Magnolia line from Panhandle to Ranger, Texas, which is now being taken up.

OPC has approved plans for a sixth project: construction of 8-inch products line across northern Florida, using second-hand pipe excavated in Texas. This will provide additional distributing facilities for the southeast to the extent of 35,000 barrels daily.

Still under study is a project for increasing movement of petroleum products from Longview, Texas, to near Paducah, Kentucky, and then East by 60,000 or more barrels daily.



The NAVY'S SEVENTY TON "MARS"

MARS, the seventy-ton "albatross" of the Martin aircraft family, spread its long wings early this month to make its first official public flight, as hundreds of spectators, including its originator, Glenn L. Martin, head of the company that bears his name, and Brig. Gen. James H. Doolittle, hero of the Tokyo bombing raid, watched the great ship cut geometrical figures on the waters of the Chesapeake Bay and roar skyward after as perfect a take-off as any plane has ever made.

The big "sea-bird" was guided aloft by William K. Ebel, Martin vice president in charge of engineering, and Capt. Harold Gray, noted Pan American Airways pilot. Two flights were made. The first started shortly after noon and followed a two-hour period during which the giant craft was towed down a creek and a river to the wide expanses of Maryland's big bay and then taxied about in surface maneuvers to warm up the four 2,000-horsepower Wright Cyclone motors. The second flight was for the benefit of the news photographers.

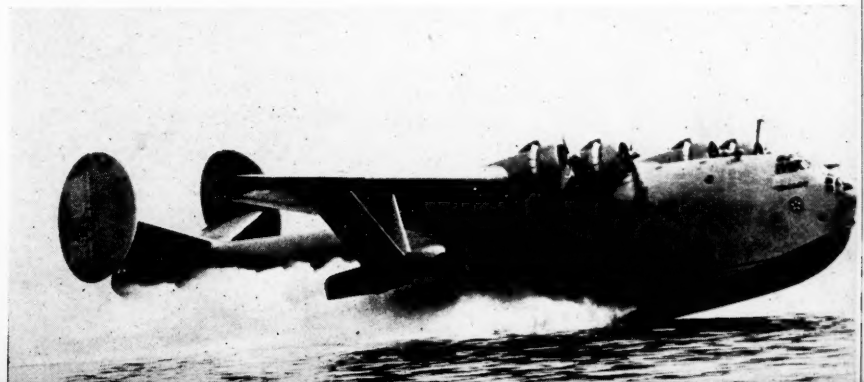
As the Mars rushed along its watery runway, kicking up masses of white spray as it cut through the waves, a Navy plane swooped unexpectedly from the sky, swept alongside the big Martin craft, and paced it, so to speak, during its twenty minutes in the air. When the flight was finished and the Mars had settled on the bay, the Navy amphibian flew by as if for

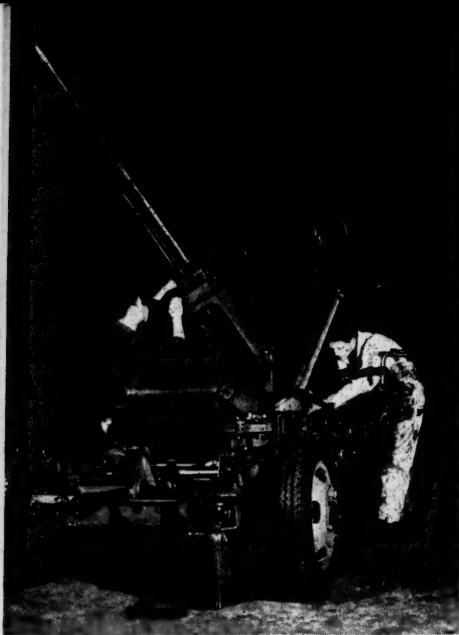
(Continued on page 49)

"MARS" DIMENSIONS

Wingspan	..... 200 ft.
Length (overall)	..... 117 ft. 3 ins.
Height (over all)	..... 36 ft.
Height (to top of hull)	.. 24 ft.
Weight (max. normal)	.. 140,000 lbs.
Beam of Hull	..... 13 ft. 6 ins.
Decks	..... 2
Engines (2000 h.p.	
Wright cyclones)	.... 4
Propellers (3 blade)	... 4
Propeller diameter	.... 17 ft. 6 ins.
Gross displacement	
(hull)	..... 995,000 lbs.
Maximum draft	..... 5 ft.
Normal crew	..... 11 men
Sleeping accommodation	.. 13 men
Weight of wings	..... 20,000 lbs.
Volume of hull	..... 16,665 cu. ft.
Wiring	..... 7.5 miles
Conduit and pipe	..... 1.9 miles
Rivets used	..... 3,000,000

Above—The seventy-ton "Mars" of the Navy undergoing final preparations for her first official public flight. Below—The new giant gathering speed before taking off from the water.





(U. E. M. Photo)

Above — Workers assembling the elevating mechanism of a new 37 mm. anti-aircraft gun carriage. These guns are taking their place in protection against the best armored and fastest flying planes that our enemies can produce.

Below—The assembly line of the Army's new .50 caliber anti-aircraft machine guns.

IT was the need for guns in quantity which led to the principle of manufacturing interchangeable parts, which is the principle of mass production.

Eli Whitney, the inventor of the cotton gin, found that he could gain speed in the manufacture of rifles by taking care to see that each operation which he performed on each part was identical—each barrel cut to the same length, turned to the same circumference, bored to the same calibre. He fashioned each hammer, each trigger and each stock to the exact dimensions of the one which went before it. In this way he was able to make separate parts in quantity and produce his rifles in volume lots.

Whitney's method of manufacture would be impossible without the precise work of machine tools. Without the principle of interchangeable parts, it would be futile to think of making thousands of anti-aircraft guns. If precise work is necessary for the manufacture of ordinary guns, it is many times more necessary for the manufacture of that highly intricate mechanism known as an anti-aircraft gun.

An anti-aircraft gun, in fact, is much more than a gun. It is a unit

made up of four main sections: the gun itself, the recoil mechanism, the carriage and mount, and the fire control equipment. Each of these requires exacting skills and the complexity of manufacture is indicated by the wide variety of companies now making them. Plants turning out parts for anti-aircraft guns include those that normally make agricultural machinery, fire arms, automobiles, optical instruments, electrical appliances, oil burners, tires, sound reproducers, sewing machines, textile machinery, cameras, surveying instruments, elevators, printing presses, pumps, safes, and other machinery with movable heavy parts.

Before any of these plants could begin to produce gun parts, they

had to do a comprehensive retooling job. Some are now completely tooled-up and at work; others are completing their "make-ready" program needed to fill the quota set by the President. When the new goals were announced, immediate action was taken to step up substantially the production in plants already making parts for guns and to find additional facilities.

Where there were facilities in place, it was necessary to train more men and women, increase the number of hours worked, and step up the flow of materials into the plants. But the number of plants with complete facilities was small compared with the ones needed to produce the guns ordered by the President. The most important

(Official photo U. S. Army Ordnance Dept.)



Mass Production of Anti-Aircraft Guns

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American industry has undertaken a tremendous task in furnishing the necessary implements of war, but when it is realized how many of these anti-aircraft guns alone are produced, with gears, surfaces and moving parts which often must be perfect to within 1/10,000 of an inch, we can proudly say that American industry has "delivered the goods."

job, at first was setting up new facilities. So far as anti-aircraft guns were concerned, facilities meant machine tools. There was a problem of floor space too, and some construction was necessary. But this was not so pressing as the need for gun-making equipment.

The gears and surfaces and moving parts that make up an anti-aircraft gun must be perfect to within 1/10,000 of an inch in some instances. Many tools capable of such close tolerances are being built in machine shops, but even under ideal conditions, it takes months to complete the more complex ones. To get enough for the accelerated program it was necessary to convert a large number of existing tools not already working on war orders.

Anti-aircraft artillery was produced only in limited numbers in this country prior to June, 1940, when funds for modest expansion of production first were made available. The principal manufacturing sources were Army and Navy arsenals which received some help from civilian plants and technicians. So far as American industry was concerned, anti-aircraft guns were strangers when the war program was started.

In this respect they differed from planes and ships which had active industries of their own. To get into war production at shipyards and aircraft plants it was necessary to expand tremendously these going facilities—a very sizeable job itself—but to get guns in anywhere near war quantities, it was necessary to create an entirely new industry. The new guns had to be built by companies new to gun building. It was almost the same situation that faced the novice rider who was given for his first mount, a horse that had never been broken in.

Even in the hands of experienced ordnance men an anti-aircraft gun is no snap to make. It must send projectiles as far as the substratosphere at targets hurt-



(British official photo from O. E. M.)

ling through space at 300 miles an hour or faster. Firing must be rapid and extremely accurate, for in many instances planes are within range for only a few seconds. Perfection must be built into the gun so that it functions flawlessly and automatically. Otherwise it will fail in its function of providing protection for ships, troops, industrial centers and cities.

Our present models are the result of continuous studies by the ordnance departments of the Army and Navy and the experience gained from the use of anti-aircraft weapons during the early stages of the present war abroad. Some foreign types have been extensively tested, and improved models of two of them, the Swedish Bofors 40mm, and the Swiss Oerlikon 20 mm, are now in production. Other types include the 37 mm and 90 mm guns. The 20 mm Oerlikon (slightly under one inch in diameter) is used as defense against dive bombers, augmenting the larger weapons that shoot to higher altitudes. Projectiles that can tear a hole a foot square in attacking planes are fired from the Oerlikons at a high rate. Its range is much greater than that of heavy machine guns. Improved production methods make it possible for the Oerlikons to be made in increasingly larger quantities.

The 37 mm gun is an automatic weapon developed primarily for

use by ground troops against low-flying aircraft. It fires a projectile slightly under an inch and a half in diameter that weighs approximately a pound and a quarter. Instant changes in aim can be made by observing the path of tracer-type slugs fired from the guns. Some of the 37 mm projectiles are armor piercing and others explode upon striking any part of a plane, causing considerable damage, often knocking it out of action. If these projectiles miss, they explode automatically in the air. This feature adds to the coverage of the fire and also prevents projectiles from exploding among friendly troops after falling to earth.

Mounted on a mobile carriage, the gun can be towed at high speed. To go into action, it is lowered to the ground, taking the weight from the wheels, but this operation takes only 15 seconds.

Like the 37 mm gun, the 40 mm Bofors is for use against low-flying aircraft. It fires a high explosive projectile, just over an inch and a half in diameter, weighing slightly more than two pounds, to a maximum vertical range higher than that of the 37 mm type. The Bofors also uses tracer-type self-destroying ammunition. This is the gun that the British used at Dunkirk and it is credited with greatly reducing the effectiveness of German aircraft over that area, making the with-

(Continued on page 48)

Half-Year Construction Awards Top Previous Southern Peak

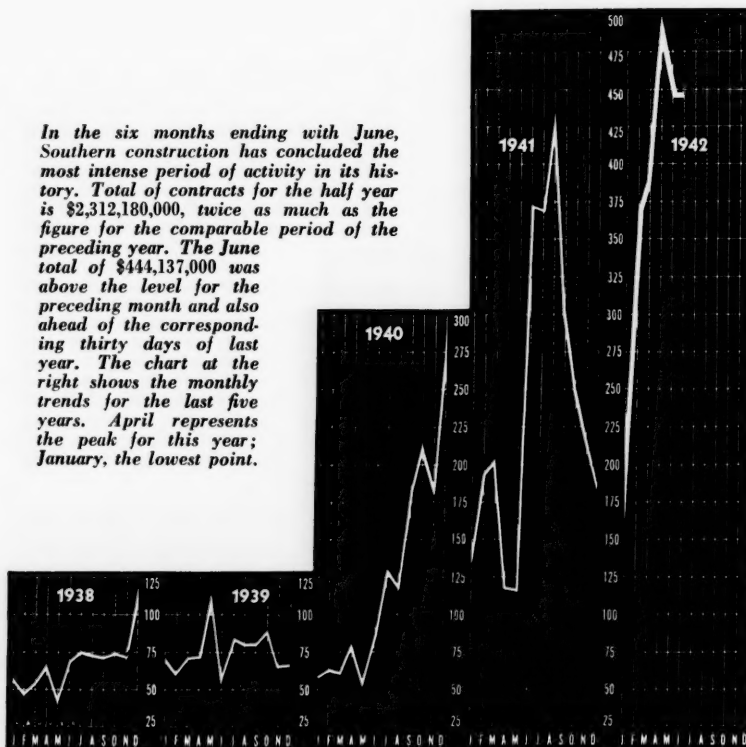
*records fall
as contracts
this year
near total
for 1941*

*June figure
above level
for May*

South's Construction By Types

	June, 1942 Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Six Months 1942	Contracts Awarded First Six Months 1941
PRIVATE BUILDING				
Assembly (Churches, Theatres, Auditoriums, Fraternal)	\$130,000	\$287,000	\$3,358,000	\$10,184,000
Commercial (Stores, Restaurants, Filling Stations, Garages)	583,000	85,000	3,943,000	14,922,000
Residential (Apartments, Hotels, Dwellings)	13,591,000	2,295,000	81,024,000	49,323,000
Office	50,000	.....	997,000	6,261,000
	\$14,354,000	\$2,667,000	\$89,322,000	\$80,690,000
INDUSTRIAL				
	\$143,773,000	\$180,270,000	\$716,333,000	\$609,258,000
PUBLIC BUILDING				
City, County, State, Federal	\$170,424,000	\$158,758,000	\$943,532,000	\$220,741,000
Housing	21,845,000	25,765,000	136,235,000	70,552,000
Schools	3,196,000	4,906,000	21,545,000	13,306,000
	\$195,465,000	\$189,429,000	\$1,101,312,000	\$304,599,000
ENGINEERING				
Dams, Drainage, Earthwork, Airports ..	\$63,206,000	\$40,091,000	\$258,220,000	\$57,899,000
Federal, County, Municipal Electric .....	.....	1,460,000	12,428,000	15,054,000
Sewers and Waterworks	6,912,000	13,980,000	42,556,000	8,136,000
	\$70,118,000	\$55,531,000	\$313,204,000	\$81,089,000
ROADS, STREETS AND BRIDGES				
	\$20,487,000	\$14,161,000	\$92,009,000	\$76,745,000
TOTAL	\$444,197,000	\$442,058,000	\$2,312,180,000	\$1,152,381,000

In the six months ending with June, Southern construction has concluded the most intense period of activity in its history. Total of contracts for the half year is \$2,312,180,000, twice as much as the figure for the comparable period of the preceding year. The June total of \$444,137,000 was above the level for the preceding month and also ahead of the corresponding thirty days of last year. The chart at the right shows the monthly trends for the last five years. April represents the peak for this year; January, the lowest point.

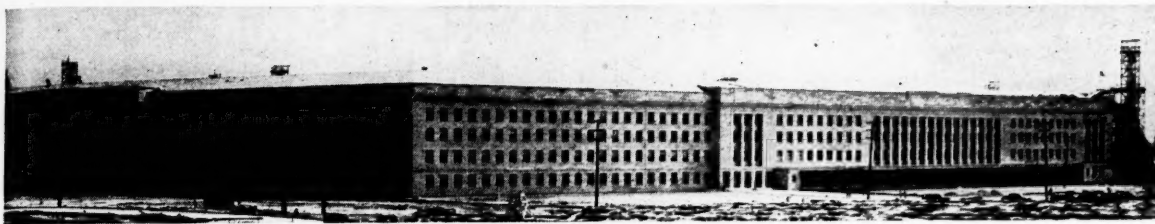


THE most intense activity in its history — that is the record established by southern construction during the six months just ended, when the total of contract awards skyrocketed to \$2,312,180,000 for the first time in any similar period.

Not only is the new half-year peak one hundred per cent ahead of the comparable period of 1941, which at that time was an unrivaled high, but it approaches within twenty per cent of the aggregate for the entire twelve months of last year, an all-time annual record.

Public building, as was to be expected, leads the various fields of construction. It is there during the first half of this year that the Government has poured over a billion dollars into southern projects such as army and naval establishments, housing work and schools.

Industrial awards rank second with a total of \$716,333,000. Their nearest competitor is the group of engineering projects tabulated under dams, earthwork, drainage, government electric and sewers and water works, with its total of \$313,204,000. Private building's \$89,322,000 was



Above—Some idea of the progress being made on the new War Department building at Arlington, Va., is indicated by the view. Exterior of one entire side and a part of another side of the great pentagon-shaped layout can be seen nearing completion.

The multi-million dollar structure is three and four stories, formed in the shape of concentric pentagons. Each face of the outer sides is 921 feet long; of the inner sides, 360 feet. Outer walls of the large pentagon, as well as the colon-

nades, are faced with limestone. The inner walls are exposed concrete. Three contracting organizations—John McShain, Inc., of Philadelphia, Pa.; Doyle & Russell, and Wise Contracting Co., both of Richmond, Va.—combined to erect the building.

topped by road and street awards by almost ten million dollars.

The June figure of \$444,197,000 for southern contract awards was above the total for the preceding month and for the corresponding thirty days of last year. Increases in most all phases of construction contributed to the rise.

A higher rate of activity in private construction was accounted for by acceleration in residence erection, despite regulations which practically stalled all other work by private builders.

Both private interests and government authorities proceeded on a large scale to relieve the housing shortages in those areas where incoming laborers are taxing existing facilities. The total of private residential awards for June was \$13,591,000; for public housing \$21,845,000.

Contracts for expansion of sanitary facilities and water supplies to accommodate the in-migrants, as the roving war workers are called, were also up slightly in June, compared with the preceding month. Highway construction improved, as a number of state departments proceeded on access and other roads and bridges of military importance.

Scarcity of critical materials and congestion of transportation are combining to complicate the construction picture. The difficulties, however, are being overcome by substitution of materials for those which are unobtainable or scheduled for other uses more closely related to war work. An example of this is a huge new southern plant, where timber trusses are replacing the usual structural steel.

The trend is away from steel where possible. More and more steel for ships is having its effect on construction, most of which is being done by the Government or for one of its agencies. The plates and shapes used in shipbuilding are practically replacing the structural forms of construction as the output of the steel mills.

Industrial construction announced during June was mostly confined to projects being sponsored by the War Department or new plants or expansions in fields where additional production is essential to the war effort. The most widely publicized project was the pipeline proposed from Texas to Illinois for relief of the gasoline shortage in the eastern states. The June total for industrial awards was \$143,773,000. (S.A.L.)

South's Construction By States

	June, 1942	Contracts to be Awarded	Contracts Awarded First Six Months 1942	Contracts Awarded First Six Months 1941
Alabama	\$20,278,000	\$44,182,000	\$89,325,000	\$135,689,000
Arkansas	12,411,000	4,497,000	36,775,000	26,569,000
Dist. of Col.	5,270,000	6,149,000	39,224,000	33,347,000
Florida	51,855,000	4,201,000	159,775,000	49,742,000
Georgia	17,031,000	18,639,000	100,878,000	56,795,000
Kentucky	3,473,000	5,612,000	85,135,000	48,979,000
Louisiana	16,155,000	19,290,000	140,805,000	99,029,000
Maryland	8,222,000	11,639,000	129,080,000	65,479,000
Mississippi	38,018,000	10,504,000	125,557,000	29,288,000
Missouri	18,935,000	89,385,000	44,128,000	49,898,000
N. Carolina	22,838,000	15,619,000	133,611,000	65,242,000
Oklahoma	21,197,000	71,949,000	126,685,000	22,927,000
S. Carolina	9,469,000	6,580,000	47,397,000	36,030,000
Tennessee	7,003,000	8,189,000	131,545,000	131,020,000
Texas	160,618,000	100,272,000	682,218,000	194,680,000
Virginia	30,818,000	21,467,000	208,295,000	62,155,000
W. Virginia	606,000	1,884,000	31,747,000	55,512,000
TOTAL	\$444,197,000	\$442,058,000	\$2,312,180,000	\$1,152,381,000

Public Building

(City, County, Federal; Housing; Schools)	June, 1942	Contracts to be Awarded	Contracts Awarded First Six Months 1942
Alabama	\$11,655,000	\$39,783,000	\$62,019,000
Arkansas	9,141,000	525,000	23,332,000
Dist. of Col.	2,839,000	1,268,000	23,624,000
Florida	38,636,000	3,780,000	82,765,000
Georgia	7,938,000	11,204,000	48,406,000
Kentucky	200,000	3,353,000	44,469,000
Louisiana	9,350,000	12,933,000	38,655,000
Maryland	2,468,000	3,535,000	52,274,000
Miss.	18,890,000	6,922,000	62,779,000
Missouri	10,289,000	554,000	23,101,000
N. Carolina	18,826,000	4,585,000	118,479,000
Oklahoma	9,564,000	48,178,000	88,861,000
S. Carolina	8,638,000	4,841,000	28,923,000
Tennessee	215,000	1,318,000	65,931,000
Texas	28,090,000	31,676,000	173,531,000
Virginia	18,175,000	13,630,000	162,377,000
W. Virginia	531,000	1,334,000	1,756,000
Total	\$195,465,000	\$189,429,000	\$1,101,312,000

Public Engineering

(Dams, Drainage, Sewers, Waterworks, etc.)	June, 1942	Contracts to be Awarded	Contracts Awarded First Six Months 1942
Alabama	\$6,602,000	\$2,578,000	\$8,417,000
Arkansas	3,215,000	440,000	9,922,000
Dist. of Col.	30,000	201,000	530,000
Florida	11,974,000	295,000	60,711,000
Georgia	3,410,000	3,150,000	11,850,000
Kentucky	1,030,000	100,000	6,583,000
Louisiana	4,953,000	2,072,000	18,883,000
Maryland	299,000	2,340,000	4,975,000
Miss.	14,438,000	2,955,000	18,719,000
Missouri	88,000	590,000	5,841,000
N. Carolina	2,806,000	10,229,000	6,491,000
Oklahoma	75,000	11,604,000	4,280,000
S. Carolina	1,000,000	1,000,000	4,274,000
Tennessee	503,000	3,000,000	50,903,000
Texas	19,484,000	14,031,000	79,438,000
Virginia	1,181,000	937,000	10,992,000
W. Virginia	.....	.....	10,395,000
Total	\$70,118,000	\$55,531,000	\$313,204,000

Industrial

(Including Private Utilities)	June, 1942	Contracts to be Awarded	Contracts Awarded First Six Months 1942
Alabama	\$.....	\$26,000	\$10,735,000
Arkansas	55,000	3,372,000	1,590,000
Dist. of Col.	.....	.....	1,481,000
Florida	100,000	26,000	6,574,000
Georgia	3,645,000	3,630,000	29,037,000
Kentucky	.....	3,309,000	30,419,000
Louisiana	590,000	3,065,000	78,654,000
Maryland	2,540,000	5,269,000	40,754,000
Mississippi	3,150,000	17,000	40,161,000
Missouri	7,315,000	87,631,000	12,048,000
N. Carolina	.....	270,000	2,104,000
Oklahoma	10,000,000	11,227,000	30,421,000
S. Carolina	25,000	370,000	3,753,000
Tennessee	6,075,000	3,146,000	12,674,000
Texas	110,248,000	51,942,000	395,747,000
Virginia	.....	6,850,000	5,499,000
W. Virginia	30,000	.....	14,682,000
Total	\$143,773,000	\$180,270,000	\$716,333,000

Private Building

(Assembly, Commercial, Residential, Office)	June, 1942	Contracts to be Awarded	Contracts Awarded First Six Months 1942
Alabama	\$110,000	\$1,100,000	\$236,000
Arkansas	.....	.....	1,580,000
Dist. of Col.	880,000	.....	6,332,000
Florida	25,000	.....	4,529,000
Georgia	250,000	55,000	5,339,000
Kentucky	.....	.....	60,000
Louisiana	197,000	.....	1,922,000
Maryland	2,359,000	45,000	19,283,000
Mississippi	180,000	510,000	1,680,000
Missouri	690,000	50,000	2,407,000
N. Carolina	115,000	60,000	1,660,000
Oklahoma	10,000	40,000	1,275,000
S. Carolina	.....	60,000	4,024,000
Tennessee	210,000	415,000	1,299,000
Texas	625,000	232,000	19,572,000
Virginia	8,678,000	50,000	17,689,000
W. Virginia	25,000	50,000	245,000
Total	\$14,354,000	\$2,667,000	\$89,322,000

SUB-CONTRACTS WANTED

The facilities listed here are those of plants desirous of executing subcontracts for war material. Others were printed in previous issues of the Manufacturers Record and still others will be listed as they are received. If you are making equipment or supplies under government contract and possibly can use the services of any of these plants under a subcontract, write us for the name and address, or if you need the services of a subcontractor of any kind write us and we will help you find one.

If you want a contract—prime or sub—write us.
LIST YOUR FACILITIES WITH THE MANUFACTURERS RECORD.

TE-3. Stove Manufacturer

Machine shop and die department: South Bend engine type lathe, .001 tolerance, 9" swing, 2' 6" centers; South Bend engine type lathe, .001 tolerance, 10" swing, 8' 0" centers; Lodge & Shipley engine type lathe, .005 tolerance, 1' 8" swing, 8' 0" centers; Cincinnati double housing planer, .002 tolerance, single cutting head, 3' 0" wide, 3' 0" high, 10' 0" long; Niles vertical slotter, .002 tolerance, 1' 3" vertical stroke, 2' 4" cross feed, 5' 4" longitudinal feed; LeBlond miller, .005 tolerance, 36" cross travel, 12" longitudinal; Cincinnati shaper, .001 tolerance, 2' 0" cross travel, 3' 0" stroke; American shaper, .005 tolerance, 1' 4" cross travel, 2' 0" stroke; Diamond surface type grinder, .002 tolerance, 1' 0" x 3' 0" table; Radial drill press, 3' 0" arm, pulls 2" dia. drill, 2' 0" vertical adjustment, power feed; pedestal type drill press, power feed, pulls 1 1/4" dia. drill, 1' 8" vertical adjustment, 10" throat; horizontal band type metal saw, can cut 1' 3" x 10"; vertical band type metal saw, 1' 0" throat, 10" high.

Sheet steel fabricating department: 300-ton capacity draw press, 5" draw, 2' 6" opening adjustment, bed 4' 0" x 6' 0"; 150-ton capacity draw press, air cushions, draw 2 1/2", 11" opening adjustment, bed 34" x 54"; metal power shear, cuts 16 gauge, 5' 0" blade; metal power shear, cuts 18 gauge, 3' 0" blade; metal power shear, cuts 18 gauge, 1' 10" blade; metal power shear, cuts 10 gauge, 10' 0" blade; power punch gang, 5' 0" long, punch 12 gauge; 3' 0" long punch gang, punch 12 gauge; 25-ton capacity punch press, 2 1/2" stroke, die space 5"; 35-ton capacity punch press, 2 1/2" stroke, die space 5"; two 10-ton corner notch presses, 1" stroke; power brake, 6' 0" long, 10 gauge capacity, ram adjustment; power brake, 4' 0" long, 14 gauge capacity, bed adjustment; two hand type brakes, 2' 6" long, 16 gauge capacity, two folders, 2' 6" long, 20 gauge capacity; three spot welders, 25 KVA, 2' 0" throat; Lincoln-D. C. heavy duty arc welder; light duty A. C. type arc welder.

Porcelain enameling department: continuous chain furnace, 350 KW capacity, can heat 3000# castings per hour, 1600° F.; box type (electric) furnace, 50 KW capacity, 3' x 4' x 1' 8" inside; box type (oil) furnace, 3' x 5' x 2' 0" inside; continuous chain blasting equipment, 2 American Foundry Wheelabrators, 3000 lbs. per hr. capacity; also pickling, drying and spraying equipment.

Mounting department: 4 gravity conveyor lines, 75 ft. long, 2 ft. wide; 11 grinders, 5-HP—2" x 14" wheels; grinder, 20-HP—

2 1/4" x 18" wheels; grinder, 10-HP surface horizontal, 52" dia.; grinder, 5-HP vertical—24" dia.; 5 drills—vertical, pulls up to 3/4" dia. drill, 10" throat.

Foundry department: 110 moulders; 19-tons per hr., cupola hand ladle pouring; 250# ladle pouring; complete metal pattern shop; core room—one oven; 7 air squeezers 14 x 25; 11 hand squeezers 14 x 18 mould.

Cleaning and blasting department: table type continuous blasting equipment, capacity 6000# per hour; tumbling type batch, capacity 6000# per hr.

Synthetic paint department: box type gas oven, 2000# steel per hr. capacity; continuous electric oven, 1000# metal parts per hour, using 4 min. burning cycle.

Plating department: nickel plating tanks; chrome plating tanks; 4 buffing wheels, stands, 2 wheels, each 4" x 14", 5 HP; stove top surface grinder, automatic, 48" x 48".

NY-2. Cutler Manufacturers.

V & O punch press, #2 1/2; V & O punch press, #3; V & O punch press, #52; Toledo punch press, #92B; two punch presses; 30" shear; planer rebuilt to a surface grinder, 20" x 80"; two natural grindstones, hand grinding, 12 x 72"; two natural grindstones, racing and bevelling, 12 x 72"; two natural grindstones, 7 x 72"; two grindstone stands, not used; double end jack, 14" x 1 1/4" hole; two Bradley helve hammers, 200 lb.; two Bradley helve hammers, 80 lb.; Beaudry upright hammer, # 253-50 lb.; Bradley strap upright hammer, 150 lb.; Bradley strap upright hammer, 100 lb.; Bradley upright hammer, 150 lb.; seven coke forges; Hotchkiss upright hammer, about 100 lb.; Fisher shear-alligator, 10" blade; press used as shear, 1 1/4" stroke; Buffalo blower-blast, 7"; drop hammer, 60 lb.; Dodge press rebuilt as straightener, #4; Gilbert & Barker gas furnace, 9" x 9"; Gilbert & Barker gas furnace, 18" x 26"; Stewart rebuilt gas furnace, 21 x 21; oblong lead pot, 8 x 18; Johnson #570 lead pot, 14 x 20 deep; American lead pot, 10 x 18 deep; Buffalo Forge Company suction blower, #7; two Eclipse Fuel gas tempering tanks, 36 x 12 x 12; Brown potentiometer, 1109; two Brown indicating control pyrometers, complete with motorized valves, 1001-810; Brown pyrometer, portable; tumbling barrel, 18" x 30; two Brown indicating control thermometers with valves, 6285-810; eight Hemming Bros. knife grinders, #1-14"; four Hemming Bros. knife grinders, #2-10"; H. C. Barr drill press, 3/4" cap.; Smith & Mills shaper, 20"; double end grinding jack, 1 1/4" spindle; Ingersoll-Rand mo-

tor blower, 2 lbs.; Buffalo blower—blast, 6"; Van Dorn portable elec. drill, 5/8"; Blount bench jack, #3; Grant Mfg. Co. rivet spinning machine, #81; Blount bench jack dbl. end, #3; Johnson Tool Co. drill press, 1/4"; Sellow head drill press bench, 3 spindle; drill press bench, 1 spindle; Sellow head drill press bench, 3 spindle; drill press bench, 1 spindle; Sellow head drill press bench, 3 spindle; Trump Bros. drill press bench, 3 spindle; High Speed Hammer Co. riveting hammer, #2A; two pinning machines; double polishing jack, 1 1/4" shaft; double polishing jack, 1 shaft; three Hemming Bros. rebuilt double headers, 1 1/4" shaft; Hemming Bros. double header, 1 1/4" shaft; two Hemming Bros. double headers, 1 1/4" shaft; double end bench jack, 2" shaft; sand drum, 12" face 20" dia.; two double end polishing jacks, 1 1/2" shaft; four polishing drums, 2 1/2" shaft; wheel washer; two tumbling barrels; Canton Foundry alligator shear, WD 24 L; Blount double end bench jack, 3/4" spindle; automatic shaper; two hand shaper, 5/8" spindles; hand shaper, 3/4" spindle; Sawmill Machinery Co. rip saw, 22" x 1 1/4" hole; Sawmill Machinery Co. swing saw, 14" x 1 1/4"; Woodworking Co., Rochester, cut off saw, 12"; Sawmill Machinery Co. slicing saw, 14" x 1 1/4" hole; American Saw Co. slicing saw, 16"; A. D. Waymoth Co. turning lathe; back-knife lathe, 8 ft.; router; six sanding drums, 22 x 12" face; two sanding drums, 22 x 3 face; Gardner Mach. Co. disc grinder DE, #4 24"; two buffing jacks; two Hemming Bros. rebuilt double header polishing machines; two polishing jacks, 1 1/4" spindle; two Blount bench jacks, #2; Jas. Pneumann mirror machine; buffing jack; Hemming Bros. rebuilt double wheel buff; American Tool Co. milling machine, #8; Hanson Van Winkle double end jack, #4; Suction blower, 6"; E. E. Garvin hand milling machine, #1; two Westinghouse d. c. generators, 30 KW; Sterling suction-blower, 30".

NJ-1. Sheet Metal and Wood Work.

Manley hydraulic press, 30 ton arbor, horizontal and vertical; Seyfert power press, 21" table single spindle; Cincinnati power press, tapping attachments 19" table single spindle; H & W power press, Spec. 12" x 1" table single spindle; National power threader, 1 1/2" pipe thread bolt; Wallace hand bending machine, heavy duty angle, bar, round and flat; C & S power punch, 7 ton, back gear 5 h. p. motor driven, straight side; Robertson power hack saw, 14"; power tapping machine, 1/2 h. p. GE motor driven, 3/4" tap capacity; Bilss power punch press, 20 ton, straight side; Garvin power drill press, adjustable table 1 h. p. GE driven single; Universal power miller, 1/2 h. p. Crocker Wheeler; Hendly power lathe, 14" x 6" 1 h. p. CW; Oliver power filer, 1/4 h. p. R & M driven; P & J power shaper, 15", 1 h. p. CW; B & S power grinder, 16" stroke surface, 1 1/2 h. p. GE; Buffalo power drill press, 20", back geared; South Bend power lathe, 1 h. p.; power planer, 16"; power shaper, 16"; Cincinnati power drill press, 21" with tapping attachment; Kern power drill press, 3 spindle; L & J power press, 50 ton clinable flywheel; American gas furnace, hardening oven; L & A power shear, 3/4" capacity, 5 h. p. GE motor squaring shear; Bliss power punch press, 15 ton inclinable 1 h. p. Wagner; Ohl power brake, 45 ton, 3 h. p. Wagner; Niagara power shear, 14 ga. 10', 7 1/2 h. p. GE

(Continued on page 52)

SUB-CONTRACTORS WANTED

For information, blue prints, specifications, etc., on the following items write or telephone the Philadelphia office of the War Production Board, quoting the symbol number of the item in question. You will then be put in touch with the engineer assigned to that item. Please quote the Manufacturers Record.

Ref. Jackson-40-1

A Penna. contractor requires subcontracting facilities to machine approximately 500 Hinge Assemblies. Tools required: 18" Swing x 4' Lathes and #2 Milling Machines. Tolerances .001.

Ref. Jackson-40-2

A Penna. contractor requires subcontracting facilities to form Sheet Metal Components. Gauge .020 to .040. Equipment required: Hydraulic Press, 100 ton, platen 3' x 4'; and Precision Sheet Metal Forming Experience.

Ref. Eser-38-1

A Penna. concern is seeking subcontracting facilities for the manufacture of Coupling Sleeves (Forgings) 23 1/4" dia. and Coupling Cover Plates (Forgings) 22 1/2" dia. Jigs and material (40-50 Carbon Steel, American Shipping Grade No. 2) to be furnished by the prime contractor. Priority rating is A-1-a. Necessary equipment: Drill Presses, Lathes, Inside Boring and Outside Turning. Delivery is to begin October 15, 1942 and six pieces per month will be needed.

Ref. Eser-38-2

An Ohio company requires subcontracting facilities for Locking Rings. Material: Steel, W.A.S. 57-107-12. Machine Tools necessary for the work are as follows: Broaching Machine or four or six Spindle Aeme, Gridley, Cleveland, or Davenport Automatic Turret Lathe. Priority rating: A-1-A. Quantity: 36,000, at the rate of 500 per day.

Ref. Eser-38-3

An Indiana manufacturer wishes to locate subcontracting facilities for Driving Disc., Sub-Assembly of Driving Plate, Driving Ring, Coil Core, Housing, Worm and Cam, Worm Gear and Shafting. Material necessary for this work is the following: From 1/2" to 2 1/2" Bar Stock—Steel—S.A.E. X51410, Carpenter No. 5 or equivalent. Equipment—Gear Cutting, Screw Machines, Key Seating, Lathes, and Surface Grinding. Delivery to be immediate.

Ref. Jackson-33-1

A Michigan manufacturer urgently requires subcontracting for AVIATION MOTOR COMPONENTS. Plain and Stepped Studs, Square and Hex Head Bolts, Castle and Sleeve Nuts, Taper and Special Pins, Special Screws and Bushings, Washers, Plugs, Caps, Nipples, Rocker Shafts, Cam Shaft Rocker Tappets, etc. Quantities: Varying, minimum 14,000 each of more than 100 different items. Material mostly AMS 6310 and 5024 Steel Bar. Minimum tolerance .001. Following tools or equivalent required: Screw Machines, Light Milling Machines, Drilling, Facilities for Precision Grinding, Heat Treating, Hardness Testing, Cadmium Plating.

Ref. Jackson-38-1

A Penna. prime contractor desires to contract experienced Die Makers with facilities to subcontract numerous Dies.

Ref. O'Hara-26-1

A Penna. firm requires subcontracting facilities for Cylinder Frames. Requirements—Large Planers 18' to 20' strokes; also #4 Heavy Millers. Material to be furnished by prime contractor.

Ref. O'Hara-26-2

A Penna. company wishes to locate subcontracting facilities for Heavy Casting Work. Requirements—Vertical Boring Mills that will swing 13 1/2' to 14'. Fairly close tolerances. This requirement also calls for Repairing and Annealing before shipment. First Castings will be ready about July 15. Material to be furnished by prime contractor.

Ref. O'Hara-37-1

A Penna. concern is seeking subcontracting facilities for Machining of High, Low and Intermediate Cylinders of Triple Expansion Engines in diameters of 24 1/2", 37 1/2" and 70" bore. Necessary tools are Vertical Boring Mills, ranging 8' and over, with 10' head clearance; Horizontal Boring Mills, with 4" to 6" bars; and 4' x 12' Planers.

Ref. Keefer-37-1

A New York concern desires capacity to manufacture the following: **Rotor Shafts**—Stainless Steel 3 and 29/64" long; maximum diameter .312" and smaller diameters at each end; Precision Grind Finish all over; smallest tolerances—.0002". **Rotor Shafts**—Stainless Steel 4 and 51/64" long; maximum diameter .312" and smaller diameters at both ends; Precision Grind Finish all over; smallest tolerances—.0002". **Grooving Tools**—High Speed Steel; hardened and ground; 1.75" diameter and 1.15" in width; tools consist of ten Cutting Teeth, with .500" dia. hole through center. **Grooving Tools**—High Speed Steel; hardened and ground; 1.75" diameter, 5.528" in width; tools consist of three Cutting Teeth, with .500" dia. hole through center; smallest tolerance + —.00025". Machine equipment required for Rotor Shafts—Small Automatic Screw Machine, Precision Grinding Facilities, Small Precision Drill Presses; For Grooving Tools—1 and 3/4" Automatic Screw Machine or Hollow Spindle Turret Lathe, Small Plain Milling Machine and Small Precision Cylindrical Grinders. Quantity: Indefinite.

Ref. Van Valkenburgh-37-1

A Penna. concern is seeking subcontracting facilities for Machining of High, Low and Intermediate Cylinders of Triple Expansion Engines in diameters of 24 1/2", 37 1/2", and 70" bore. Necessary tools are Vertical Boring Mills, ranging 8' and over, with 10' head clearance; Horizontal Boring

Mills, with 4" to 6" bars; and 4' x 12' Planers.

Ref. Keefer-36-1

A Massachusetts company requires subcontracting facilities for the following: (1) Collar Pin Stud—1 1/4" overall length, diameter .187"; threaded on one end, length of thread 7/16", length of pin end .531" to collar, width of collar .093" champered; diameter of collar 15/32"; drilling on pin end .187" diameter, depth of drilling 1/4"; to be Cadmium Plated; tolerances + or — .003. (2) Cylindrical Body—.500" overall length, diameter .218"; Drilling and Countersink on one end to a depth of .187", diameter of drilling .156"; opposite end of piece a Drilling, Countersink and Counterbore operation, combined depth of drill and counterbore .234", diameter of drilling .093", diameter of counterbore .156"; to be Knurled for a distance of 1/4" starting 1/16" from end of body; tolerances + or — .002. Materials: For Collar Pin Stud—Brass—1.5% Lead and for Cylindrical Body—Aluminum—99.8 Hard. Automatic Screw Machine, 1/4" and 1/2" capacity, necessary for this work. Quantities: Stud—25,000 to 50,000 and Body—100,000 to 200,000.

Ref. Vermont-36-1

URGENTLY NEEDED — Manufacturers capable of making Worm and Worm Gear Sets, Spiral Bevel Pinions and Gear Sets for Winches carrying **AA priority**. Contractor desires to secure 350 sets of Worm and Worm Gears, and 350 sets of Spiral Bevel Pinions and Gears. The Worm and Worm Gears are approximately 1 1/4" pitch. The Gear is approximately 14" pitch diameter and the Worm 6 threads in length by approximately 3 1/2" pitch line diameter and the Shaft is approximately 3' 10" overall length. The Spiral Bevel Gear is approximately 7 3/4" pitch diameter with 42 teeth, while the Bevel Gear Pinion is approximately 2 1/4" pitch diameter having 12 teeth. Manufacturers are requested to make deliveries on this material at the rate of 80 sets per month beginning in the middle of July. Any concern having the necessary facilities and experience in this class of work is requested to contact immediately the War Production Board office at Montpelier, Vermont, **BY MAIL**, giving a brief outline of their qualifications to undertake this work.

Ref. Cruse-35-1

A Penna. manufacturer is looking for subcontracting facilities for 52 Cylinder Covers and 52 Cylinder Bases. Material required is Cast Steel and Cast Iron, to be furnished by prime contractor. Tolerances .002. Quantity—104. Production is to start as soon as possible. Equipment required is as follows: All Tools and Jigs, 6' Planer, Floor Type Horizontal Boring Mill, and 6' Radial Drill.

Ref. Jackson-35-1

The Government requires Prime Contractors for Forge Lapwelded Tanks 7' x 3'. Tested for 500 lbs. pressure. Facilities—Forge Lapweld Equipment, Electric Welding Equipment—I.C.C. Specifications.

Ref. Roystuart-35-1

The Government requires subcontracting facilities for the manufacture of 24 different (Continued on page 52)

NEW PRIORITIES

PUT IN EFFECT DURING JUNE

Agar—M-96 Amend. #1 extends original order to include wet as well as dry forms of agar.

Agave Fibre—M-84 Amend. #6 further restricts production of agave wrapping twine.

Air Conditioning Machinery and Equipment—L-38 Amend. #1 grants some relief to manufacturers and distributors of industrial and commercial refrigeration from provisions of original order. Use form PD-520.

Aircraft Control and Pulley Bearings—L-145 concentrates production of anti-friction aircraft control and pulley bearings to certain sizes.

Aircraft Products (Material Entering into Production of)—P-109-a Amend. #1 permits suppliers who are not required by terms of Reg. #11 to come under PRP to extend ratings for filling purchase orders of producers rated under P-109 and P-109-a even after orders have expired. P-109 (as amended 3-11-42) Amend. #2 amended with P-109-a.

Amusement, Gaming and Weighing Machines and Automatic Phonographs—L-21-a Amend. #2 includes manufacturers of parts for machines under terms of original order.

Asbestos—M-97 (as amended 6-18-42) changes circumstances under which amosite asbestos may be used.

Baby Carriages—L-152 permits manufacture but restricts use of iron and steel. Use forms PD-423 and 417.

Benzene—M-137 prohibits delivery or acceptance after July 1. Use forms PD-223-a and PD-224-a.

Beryllium—M-160 establishes complete allocation control. Use forms PD-496 and 497.

Burlap and Burlap Products—M-47 (as amended 5-2-42) Amend. #1 enables Commodity Credit Corp. to purchase frozen stocks to relieve shortage on West Coast.

Butadiene—M-178 places production from producers under complete allocation control excepting only those producers making less than five tons per month. Use form PD-33.

Cadmium—M-65 (as amended 6-17-42) permits delivery to distributors and users only upon specific authorization. Use form PD-441.

Canned Foods—M-86-a (as amended 6-27-42) increases percentages of specified fruits and vegetables to be set aside for Government and Lend-Lease purposes. Use form PD-343.

Canning Fruits and Vegetables—P-115 Amend. #1 assigns higher preference rating to packers. Use form PD-285.

Cellophane and other Cellulose Transparent Material—L-20 (as amended 6-8-42) places further restrictions on use.

Cellulose (Ethyl)—M-175 establishes

complete allocation control. Use forms PD-550 and 549.

Chemicals (Production, Maintenance, Repair and Operating Supplies)—P-89 (amended) Amend. #2 permits chemical producers to build up inventories of coal and coke.

Chlorate Chemicals—L-75 Amend. #1 establishes complete allocation control. Use forms PD-515 and 516.

Chromium—M-18-b (as amended 6-27-42) eases restrictions on use of chrome chemicals, particularly in the manufacture of pigments and printing inks.

Chromium and Nickel in Automotive Valves—L-128 establishes rigid specifications for manufacture of exhaust valves.

Church Goods—L-136 curtails use of critical materials in manufacturing. Use form PD-417.

Coal Stokers—L-75 Amend. #1 permits assembly of small stokers from materials in manufacturers hands on May 31.

Cobalt—M-39-b Amend. #1 permits use of cobalt-nickel in making ground coat frit. M-39 (as amended 2-7-42) Amend. #1 extends order indefinitely.

Cocoa—M-145 Int. #1 prevents excessive quota—exempt processings of cocoa beans. M-145-b provides a 14 percent reduction from the present quota of cocoa beans that may be processed in quarter beginning July 1.

Coffee—M-135 Amend. #2 gives aid to coffee roasters in handling excess green coffee; use form PD-533. M-135 Amend. #3 provides change of basis for computing 1942 monthly quotas beginning July 1. M-135-b establishes roasters' and wholesalers' monthly quotas at 75 percent of average monthly deliveries during corresponding quarter of 1941.

Communications—L-50 (as amended 4-23-42) Amend. #1 permits temporary equipment to be replaced by permanent equipment on telephone installations. L-50 (as amended 4-23-42) Int. #1 requires applicants for telephone service to show need for same. P-129 Amend. #1 postpones effective date of maintenance, repair and operating supplies 27½ restriction to Sept. 1. P-129 Int. #1 modifies restrictions of original order. P-130 Amend. #1 postpones effective date of 27½ restriction to Sept. 1. P-130 Int. #1 modifies restrictions on inventories in radio and wire communications industries.

Construction—L-41 Int. #1 embodies numerous interpretations on original order.

Copper—M-9-c (as amended) Int. #4 curtailing use of copper in certain items, with respect to pipes and fittings for water supply and distribution systems. M-9-c (as amended 5-7-42) Amend. #2 permits use of zippers, snappers, fasteners and other copper and brass

clothing findings but none may be manufactured.

Corsets, Combinations and Brasieres—L-90 Amend. #1 permits use in specified cases.

Dairy Products Plants—P-118 Amend. #2 assigns higher ratings for maintenance and repair materials and extends order to Sept. 30.

Dental Equipment—L-139 reduces manufacture of certain sizes and types of dental burrs in schedule I to increase production of types needed by Army and Navy.

Domestic Mechanical Refrigerators—L-5-d Amend. #1 extends time in which to submit reports. L-5-d Int. #1 interprets "had been bought and fully paid for" as applying if (a) the refrigerator was in the seller's possession before issuance of the freeze order, and (b) the seller had received payment in full prior to issuance of order.

Douglas Fir Plywood—L-150 places restrictions on deliveries of moisture-resistant type after July 1.

Drum Exterior Coating—M-158 Amend. #1 lifts restrictions to enable manufacturers to use the drum coating they have on hand for drums of 29 gauge or heavier steel.

Dyestuffs—M-103 (as amended) Amend. #1 provides civilian quotas for anthraquinone vat dyes for July 1 to Sept. 30 at the rate of 70 percent of their use in 1941.

Electric Fabrics (Knitted, Woven or Braided)—M-174 limits use to essential health articles and to military products. M-174 Amend. #1 lifts restrictions on some fabrics unsuitable for health articles. L-137 restricts use of elastic fabrics in making sanitary belts and supports.

Extended Surface Heating Equipment—L-107 limits shipments to orders for Army, Navy, Maritime Commission and Coast Guard.

Farm Machinery, Equipment, Attachments and Repair Parts—L-26-c restricts use of copper in making farm tractors and engine power units. L-26-d places further restrictions on sale of above. P-95 Amend. #3 permits deliveries of iron and steel to producers after June 30. L-26 Amend. #4 permits manufacture of wooden beehives.

Feminine Clothing—L-116 Amend. #1 lifts certain restrictions of original order as to nightgowns, slips and pyjamas.

Fishing Tackle—L-92 Amend. #1 permits makers to continue to produce their ware until June 30.

Flags—M-166 makes available with rating of A-2 certain materials and quantities for manufacturers of flags other than those being made for the armed forces.

Flashlight Batteries and Cases—L-71 Amend. #1 permits manufacturers to use up inventories of plated iron and steel at rate not exceeding 1940 production.

Fluorescent Lighting and Fixtures—L-78 Amend. #2 releases certain fixtures for sale and extends order to Sept. 1.

Foundry Equipment and Repair Parts—P-31-a permits suppliers and sub-suppliers to use rating assigned under

(Continued on page 54)

War Contracts and Allocations to Southern States

Increase \$1,216,592,000 During May

War contracts and allocations distributed by government agencies to the southern states for the period June 1, 1940 through May, 1942, totaled approximately \$12,903,601,000 compared with \$11,687,009,000 at the end of April, 1942.

This represents a gain of \$1,216,592,000 or nearly 10.5 percent during May. Totals by states and by government agency for the entire period are shown in the accompanying table.

Major War Supply and Facility Contracts and Allocations, June, 1940, Through May, 1942

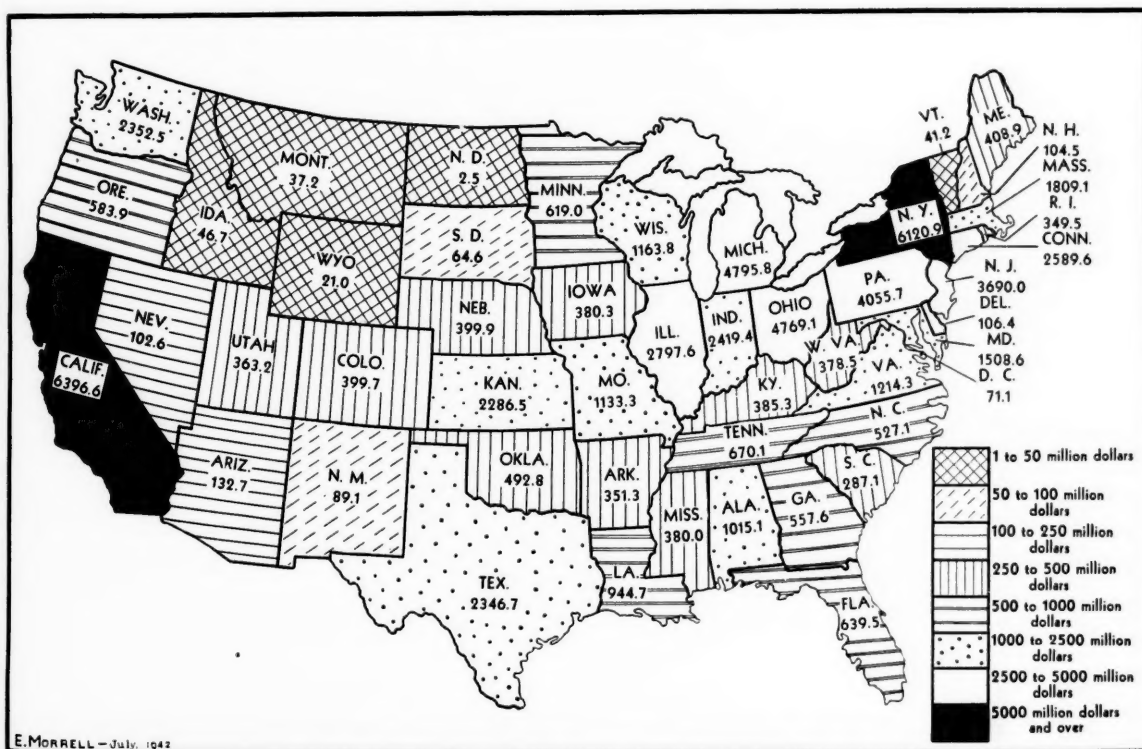
(Thousands of dollars)

State	Army, Navy and Maritime Commission			Facilities		Dept. of Commerce	National Housing Agency	Federal Works Agency	Federal Security Agency	Federal Loan Agency R.F.C.	Total
	Aircraft	Ships	Miscell.	Industrial	Non-Industrial						
Alabama	.....	294,657	170,603	363,180	143,778	967	12,374	18,034	5,345	5,908	1,015,148
Arkansas	.....	.....	2,421	16,353	103,245	.....	2,622	3,940	3,336	499	351,334
Dist. of Col.	.....	237	2,068	14,635	32,691	.....	7,622	12,613	1,115	157	71,138
Florida	950	192,418	52,294	33,626	304,477	5,940	11,544	28,759	4,712	4,822	639,542
Georgia	.....	129,413	142,331	44,966	209,695	2,800	8,085	12,778	5,689	1,818	557,575
Kentucky	.....	.....	43,864	144,177	134,905	708	6,268	10,189	4,681	40,494	385,286
Louisiana	68,496	312,643	51,837	287,149	194,045	2,445	5,004	15,832	4,293	2,869	944,665
Maryland	580,284	338,080	248,306	169,443	109,804	.....	21,583	13,824	3,208	15,759	1,508,592
Mississippi	.....	123,983	23,993	59,394	152,991	1,430	1,741	11,364	4,661	307	379,998
Missouri	105,062	1,506	441,736	412,600	124,779	310	9,093	29,280	4,988	3,973	1,133,345
North Carolina	.....	95,042	122,755	36,509	239,645	587	9,326	17,218	5,292	518	527,067
Oklahoma	160,710	.....	36,884	168,784	110,582	768	1,855	8,144	4,870	249	492,846
South Carolina	.....	10,800	88,818	36,925	108,707	2,352	10,570	25,682	3,094	140	287,088
Tennessee	35,904	14,030	138,280	284,789	178,786	253	3,210	8,723	5,085	1,223	670,398
Texas	334,615	248,214	203,880	829,726	645,623	5,108	18,279	44,329	11,882	4,907	2,346,721
Virginia	.....	487,911	73,450	200,318	364,500	112	50,664	29,803	4,429	784	1,214,344
West Virginia	.....	30,948	71,711	251,188	1,524	.....	1,365	17,596	4,947	135	378,514
South	1,286,021	2,278,902	1,915,231	3,320,145	3,159,777	23,780	181,205	308,117	81,627	84,562	12,903,601*
United States	17,063,998	7,760,300	20,498,485	13,057,978	8,248,969	55,194	540,737	791,137	256,405	973,799	69,275,550*

*Includes \$25,548,000 for the United States under the Farm Security Administration of the U. S. Dept. of Agriculture for defense housing; of this, \$10,928,000 was for the South—Ala., \$302,000; Ark., \$97,000; La., \$52,000; Md., \$8,301,000; Miss., \$134,000; N. C., \$175,000; Tenn., \$115,000; Tex., \$158,000; and Va., \$2,373,000.

"Aircraft" includes contracts for airframes; airplane engines, propellers, and other parts; and certain related equipment such as parachutes and aircraft pontoons, armament, instruments, and communication equipment are excluded. "Ships" includes contracts for the construction of new vessels of all kinds; the purchase of used ships; and ship conversion, recommissioning, and repair. Propulsion machinery (when separately contracted for), armor, armament, navigation and radio equipment, parts, and materials are excluded.

War contracts and allocations of all Federal agencies through March was \$69,275,550,000. Of this, \$12,903,601,000 has gone to southern states. Totals for each state in millions of dollars are shown in the map below.



Important New Industrial Plants and Expansions in the South During June

FLORIDA

MIAMI—addition—Witters Construction Co., 1745 S. W. 6th St. has contract for addition to shop buildings, 3650 Bird Ave. for Coconut Grove, for Shelley Tractor & Equipment Co.; 30x40 ft.; concrete, brick and stucco; built-up roof; work started.

PENSACOLA—warehouse—Armstrong Cork Co., has permit for \$40,000 warehouse; 1-story; tile; 107x260 ft.

TAMPA—shipyard—Maritime Commission announced award of contract to McCloskey & Co. of Philadelphia, Pa. for construction of 24 reinforced concrete cargo vessels; the 24 vessels, one of which is to be completed this year, and remainder by June 30, 1943, will be constructed at a new shipyard to be built at Tampa; vessels will be 360 ft. long; propelled by steam reciprocating engines.

GEORGIA

Plant—War Department let contract to Robert & Co., Associates, Atlanta, for architectural - engineering - construction - management services in connection with a manufacturing plant in Georgia; cost in excess of \$3,000,000; construction will be supervised by Atlanta District Office of Corps of Engineers. Miller Electric Co., 556 Riverside Ave., Jacksonville, Fla., low bidder for electrical work; Chalker & Lund, 3900 Georgia Ave., West Palm Beach, Fla., has contract for foundation only.

LOUISIANA

NEW ORLEANS—wood platten—Chris Larsen Co., Maritime Bldg. has contract for wood platten for shell assembly at plant of Louisiana Shipyards, Inc.; J. G. White Engineering Corp., Interstate Bank Bldg., Engr.

PLAQUEMINE—gas line—Williams Brothers, Dallas, Tex., has contract, work to begin in July on natural gas line from about 11 miles from here to Plaquemine for city, Irwin J. Wilbert, Mayor.

POINTE-A-LA-HACHE—refinery—River Petroleum Corp. erecting oil refinery at Belle Chasse near the Seatrail terminal.

SHREVEPORT—addition—Werner Construction Co., has contract for addition to machine shop building for J. B. Beaird Corp., St. Vincent Ave.; cost \$21,434.

MARYLAND

BALTIMORE—building—Morrow Brothers, 14 E. Eager St., have contract for inspection buildings, Bush & Hamburg Sts. for Koppers Co.; 1-story; 150x50 ft.; masonry; cost \$62,000.

BALTIMORE—catalytic plant—M. W. Kellogg Co., 225 Broadway, New York, has contract for catalytic plant, 3801 Boston St., for Standard Oil Co. of New Jersey; cost \$2,000,000.

BALTIMORE—alteration—Standard Industries, Inc., C. Fred Obrecht, 4101 E. Monument St., erect \$40,000 storage building addition and alteration, Dundalk Ave.; 1-story; brick; 250x800 ft.; owner builds.

BALTIMORE—refinery—Standard Oil Co. of New Jersey, erect refinery building, 3801 Boston St.; 1-story; brick; owner builds.

BALTIMORE—meat packing plant—J. Spevak Co., convert building, 110-14 S. Central Ave. into meat packing plant; owner builds; cost \$15,000.

BALTIMORE—Consolidated Gas, Electric Light & Power Co., of Baltimore, in its construction budget for 1942 provides for expenditures of \$11,589,009 of which amount \$4,580,376 represents a carry-over from 1941 budget for construction work started but not completed in 1941; estimated construction expenditures relate to the following classes of facilities: Electric generating plants, \$5,969,429; electric transmission and distribution, (including substations facilities), \$3,941,036; all other (including gas, steam heating, etc.), \$1,679,144; plan placing in service in early part of 1943, initial

Contracts Awarded

50,000 k.w. electric turbo-generator at new Riverside station in eastern suburbs of Baltimore.

BALTIMORE—office and warehouse—W. E. Bickerton Construction Co., 101 W. 22nd St. has contract for \$75,000 office and warehouse, 2740 Loch Raven Rd. for Hajoca Corp.; 1-story; masonry.

FAIRFIELD—rigger building—Consolidated Engineering Co., 20 E. Franklin St., Baltimore, has contract for riggers building for Bethlehem-Fairfield Shipyard, Inc.; 1-story; 304x48 ft.; masonry. Cummins Construction Corp., 803 Cathedral St., Baltimore, has contract for telephone room.

FAIRFIELD—sub-station, etc.—Cummins Construction Corp., 803 Cathedral St., Baltimore, has contract at \$100,000 for sub-station, 4501 Curtis Ave. and Consolidated Engineering Co., 20 E. Franklin St., Baltimore, contract at \$60,000 for power house, 1900 Frankhurst Ave. for Bethlehem Fairfield Shipbuilding Co.

FAIRFIELD—storage building—Cummins Construction Corp., 803 Cathedral St., Baltimore, has contract for template storage building for Bethlehem-Fairfield Shipyard, Inc., at Curtis Bay.

SPARROWS POINT—service building—Bethlehem Steel Co., receiving sub-bids for service building; 2-story; brick; 35x98 ft.; owner builds; cost \$25,000.

MISSOURI

Plant—War Department announced award of contract to Mauran, Russell, Crowell and Mullgardt of St. Louis, Mo., and Giffels & Waller, Inc., Detroit, Mich., for architectural-engineering services in connection with expansion of a manufacturing plant in Missouri, to cost in excess of \$3,000,000; to be supervised by St. Louis, Mo. District Office of Corps of Engineers.

Plant—George A. Fuller Co., 597 Madison Ave., New York, has contract for \$1,100,000 plant for Defense Plant Corp.; 2-story; 370x200 ft. and 180x160 ft.; concrete foundation; steam heat; Walker & Gillette, Archt., 597 Madison Ave., New York.

ST. LOUIS—alterations—George A. Fuller Co., 597 Madison Ave., New York, has contract for alterations and installation of heating, plumbing for office and locker rooms, 4121 N. Kingshighway, for General Cable Corp., 420 Lexington Ave., New York; Walker & Gillette, Archts., 597 Madison Ave., New York; cost \$60,000.

SEDALIA—pipe plant—Universal Concrete Pipe Co., Columbus, Ohio, let contract to C. G. Schrader and W. C. Cramer of Sedalia, for erecting building for branch plant; building to house machinery valued at \$100,000.

NORTH CAROLINA

HIGH POINT—hydro-electric plant—Government assigned contract with W. R. Holway and Associates, Tulsa, Okla., to design and supervise construction of the \$8,000,000 hydro-electric project on Yadkin River; Holway engineers will establish headquarters at Winston-Salem; will take over original plans designed by Murray and Flood, Inc., and adapt them to war plan needs; Kenneth Markwell, PWA engineer in charge.

OKLAHOMA

Refinery—Associated Refineries, Inc., recently formed with L. B. Simmons of Duncan, chairman of the board, let contract to Frick-Reid Supply Co., Tulsa, for construction of \$10,000,000 100-octane aviation gasoline refinery in southern Oklahoma; completion by Oct. 1, 1943; Universal Oil Products, Engrs.

TENNESSEE

Plant—War Department announced negotiation of a letter of intent with Charles T. Main, Inc., Boston, Mass. and Frazier-Brace Engineering Corp., of New York, for architectural, engineering and management service in connection with manufacturing plant in Tennessee; construction will be supervised by District Engineer, Kingsport.

Furnaces—Rust Engineering Co., Pittsburgh, Pa., has contract for 3 forging furnaces to be installed in Tennessee for Caine Steel Co., Chicago, Ill.

TEXAS

Refinery—Phelps Dodge Corp. awarded contract for construction of new units to its electrolytic copper refinery; increase capacity of refinery; cost \$2,650,000.

Plant—Eastern States Petroleum Corp., Houston, erect plant to include drainage, railroad trackage, asphalt roads, sewer system; tank buildings; piling and foundation work; gas distribution system; 1-story office; locker and shower building; etc.; cost \$6,000,000; Foster Wheeler Corp., 165 Broadway, New York City, Engrs. and Supervisors.

CORPUS CHRISTI—machine shop—T. A. Applewhite, 909 Hancock St., has contract for machine shop, 105 S. Water St. for C. E. Russell.

DAINGERFIELD—iron plant—Lone Star Steel Co., John W. Carpenter, Pres., Dallas, will begin immediate construction of pig iron blast furnace, 6 miles south of Daingerfield; furnace will use a modern battery of 61 by-products coke ovens, the Becker underjet type, having a nominal capacity to carbonize 1400 net tons of coal daily and produce 1000 tons of blast furnace coke; J. W. Greene of Pittsburgh, Pa., representative of Koppers Co., builders of blast furnace ovens will have equipment available; plant will be complete with coal preparation, coke sizing, and screening equipment for preparing blast furnace coke, together with by-product recovery apparatus for manufacture of ammonium sulphate fertilizers, etc.; furnace will have a capacity between 1100 and 1200 tons of molten iron daily; a complete washery and jigging plant will be erected near coke oven and blast furnace plant; erection of plant approved by War Production Board; completion of the steel plant would entail the expenditure of an additional \$20,000,000 and give the plant a capacity of 500,000 finished net tons annually; John W. Carpenter in connection with Charles R. Moore, general contractor with Austin Bridge Co., Dallas; W. J. Powell, resident engineer; George Watson, general superintendent; Charles L. Bransford, Birmingham, Ala., vice-president and general manager of the new plant, agreed on plans of housing and perfecting water reservoir to feed the mill; furnace will cost \$15,000,000; Austin Bridge Co. will probably receive contract for plant.

EL PASO—addition—J. E. Morgan & Sons, 210 N. Campbell St., El Paso, has contract for addition to refinery for Phelps Dodge Corp., c/o Wilbur Jurden, Ch. Engr., North Loop Rd.; cost \$2,650,000.

FORT NECHES—rubber plant—B. F. Goodrich Rubber Co., Akron, Ohio, starting work immediately on \$40,000,000 plant; Goodrich plant will take up process of turning out synthetic rubber products where the Neches Butane Products Co. leaves off; Neches Co. was formed by Texas, Gulf, Atlantic, Pure and Magnolia Oil companies; plant will have a capacity of 55,000 tons per year, and will be similar to plant Goodrich will build at Borger; A. E. Prack, Archt., Pittsburgh, Pa.; H. E. Cook, chief engineer of Goodrich Co.; construction companies are: Winston Brothers Co.; C. F. Staglin & Sons; Missouri Valley Bridge & Iron Co. and Sollitt Construction Co.; J. N. Chester Engineers, Pittsburgh, Pa., Engrs.

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Right top—Elevation view of the new southwestern plant of Curtiss-Wright aircraft organization. Middle — Final and sub-assembly portions, with giant hangar doors that open out onto the flying field.

Bottom—The new office building. The entire plant was designed by Albert Kahn, Associated Architects and Engineers, Inc., Detroit, Michigan.

WEST VIRGINIA

Butadiene Plant—U. S. Rubber Co., New York, let contract to Kuhn Construction Co., Inc., Kanawha Valley Bldg., Charleston, W. Va., for additional buildings on site of butadiene plant near Dunbar; Ford, Bacon & Davis, Engrs., New York, in charge of plant construction; U. S. Rubber Co., will operate plant for Defense Plant Corp.; Carbide & Carbon Chemicals Corp., New York, will operate the basic units in which butadiene and styrene will be made and combined into the buna-S product; Blaw-Knox of Pittsburgh, Pa., will supply machinery; first units to be completed by Jan. 1, 1943; core drilling and other incidental work started.

CHARLESTON—welding shop — McJunkin Supply Co. let contract to H. B. Agsten Sons, 417 Washington St., E., for \$20,000 welding shop at 1400 Hansford St.; Tucker and Silling, Archts., Masonic Temple.

SOUTH

Humble Oil & Refining Co., Humble Bldg., Houston, Tex., will erect 2 plants in connection with production of synthetic rubber; total cost \$43,000,000; will operate a butyl rubber plant under a contract with Rubber Reserve Co., a subsidiary of Reconstruction Finance Corp.

Contracts Proposed

ARKANSAS

GUION — transmission line — Arkansas Power & Light Co., Pine Bluff, clearing right of way between Gulon on White River and Mountain View high power line to build a 13kw. electrical transmission line to the Silica Products Co.'s plant.

STAMPS — power plant—Arkansas Power & Light Co., Pine Bluff, has site 2 miles east of Stamps for erection of \$3,000,000 steam operated electric generating station; will contain a generator capable of producing 30,000 kw. per hour; contract will be awarded soon for construction of road from Highway 82 south to plant site; contract will also be let for spur track from Cotton Belt main line to site; plant will be so constructed that three additional units of 30,000 kw. an hour capacity can be added.

YELLVILLE — mining — Moark Mining Co., operating the Gloria and Red Mill properties, plan construction of a plant; C. E. Rabenau in charge of operations.

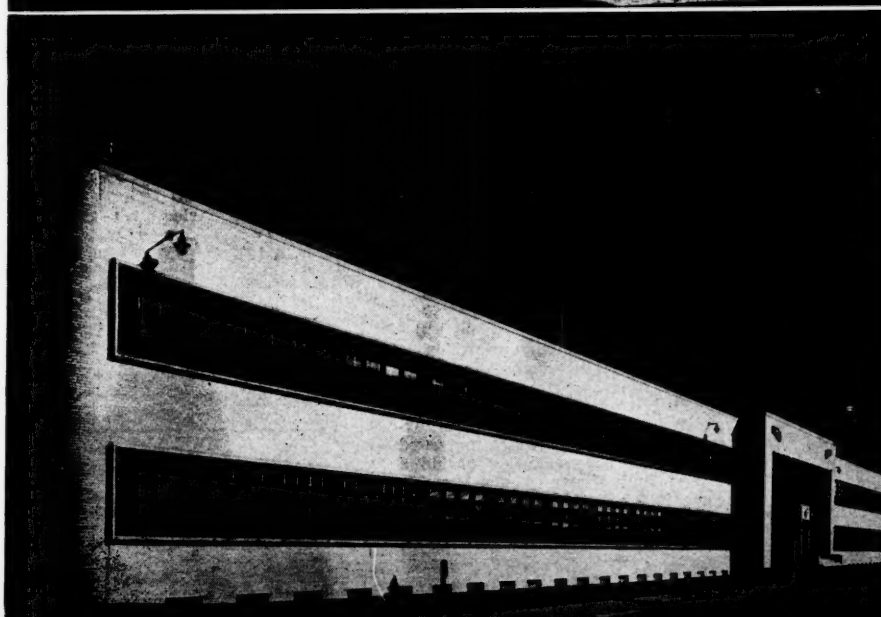
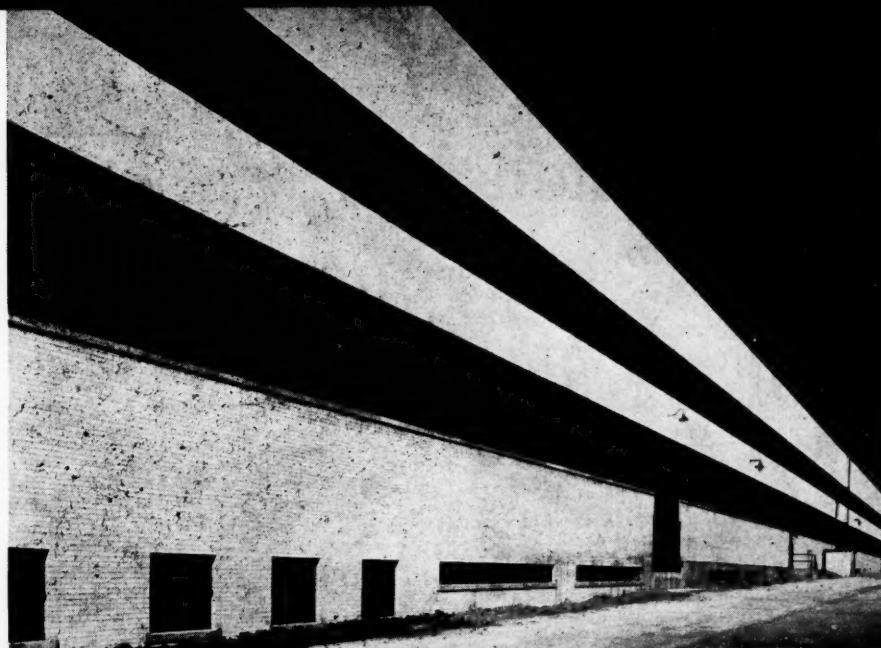
FLORIDA

Pipe line—Harold L. Ickes, Petroleum Coordinator, approved plans for constructing an 8-in. petroleum products pipe line across Northern Florida to help supply Atlantic coastal area as far north as Norfolk, Va.; daily estimated capacity 35,000 bbls.; will extend from Port St. Joe on Florida Gulf Coast to Jacksonville on East Coast; distance of 220 miles; estimated cost \$144,000,000; will be operated by American Liberty Pipe Line Co. of Dallas, Tex.; will use second hand pipe excavated in Texas.

GEORGIA

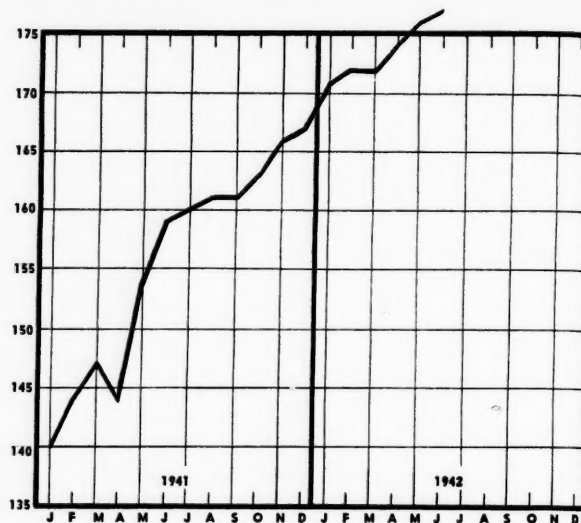
Construction program—Georgia Power Co., P. S. Arkwright, Pres., Electric Bldg., Atlanta, has total construction budget for 1942 of approximately \$7,000,000; of this amount approximately \$2,800,000 will be invested in new generating capacity; second 40,000 kilowatt unit of the Arkwright steam electric generating plant near Macon, placed

(Continued on page 50)

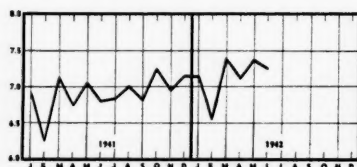


Industrial Production Trends

Industrial production in June, as recorded on the 1935-1939=100 adjusted index, stood at 177, based upon preliminary returns. This compares with 176 in May, which latter figure may yet be revised downward as was the case with March and April, which now stand at 171 and 173 respectively. Demands for war materials are such as to indicate that industrial production will go steadily higher with each succeeding month for at least a year ahead.

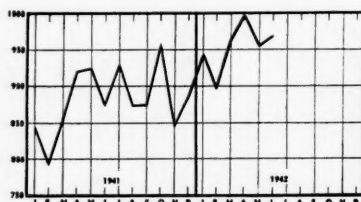


INDUSTRIAL PRODUCTION
(Adjusted Index 1935-39=100)



STEEL INGOT PRODUCTION
(Millions short tons)

Steel production in June, amounting to 7,022,155 tons, was the second lowest monthly production this year, though the total for the first six months was 42,570,247 or more than 5% higher than the corresponding period of last year, though the operating rate of capacity (96.9%) is 1% below the average operating rate of capacity in 1941. Average weekly production was 1,645,545 tons against 1,579,753 tons last year.

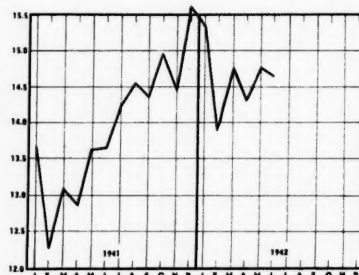


COTTON CONSUMPTION
(Thousands of bales)

Cotton consumption in June amounted to 969,000 bales, according to preliminary returns which, if upheld when final figures are available, brings the 11-month total of the current season to 10,172,000 bales. The estimated total for the entire 12-month season is 11,250,000 bales. Mill consumption (total consumption less cotton consumed in government materials programs) increased 20% over the corresponding period a year ago and shows a considerably larger gain for the 10 months than total

consumption, which advanced 16%. Continuation of the war and expansion of the armed forces are expected to accelerate cotton consumption next season.

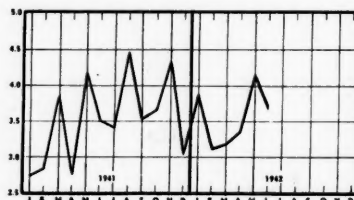
Electric power production which rose to 14,988,000,000 kw. hrs. in May declined slightly in June to 14,650,000,000 kw. hrs. but present tendencies of daily



ELECTRIC POWER PRODUCTION
(Billions kilowatt hours)

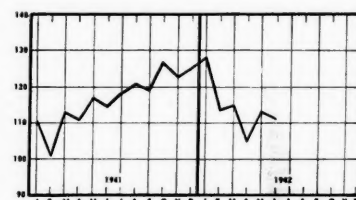
average production indicate that a slow but steady rise may be expected from now on. The increased production is fairly evenly distributed between fuel and water power operated plants.

Carloadings, which jumped to 4,171,000 in May, declined somewhat during June to 3,668,000, according to early returns. Freight carloadings in the third



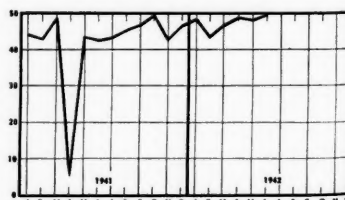
CARLOADINGS
(Millions)

quarter of 1942 are expected to be 4.6% above actual loadings in the same quarter of 1941, or a total of 6,959,721, compared with 6,653,849 for the same 26 principal commodities in the corresponding period of 1941.



CRUDE PETROLEUM PRODUCTION
(Millions of barrels)

Crude petroleum production, which started its downward trend in February of this year, continues low with an estimated 111,250,000 barrels produced in June, the latest official figures for April, when 105,053,000 barrels were produced. Curtailed production is due not to a lack of oil but to a lack of adequate trans-



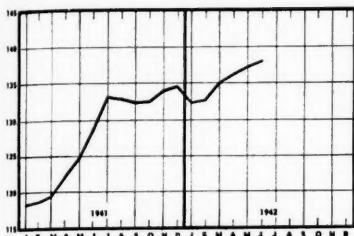
BITUMINOUS COAL PRODUCTION
(Millions of tons)

portation facilities. The situation is believed will be eased before the end of 1942.

Bituminous coal production, which declined very slightly in May to 48,250,000 tons, rose a little during June to 48,755,000 tons, according to available report. Such a rate of production is ex-

pected to be maintained throughout the ensuing year for the demand for coal is heightened by the government's urge for conversion from oil-burning furnaces to coal.

Factory employment continued its steady upward trend in June to 138.1 on the 1923-1925=100 adjusted index. This gain closely approximates the 1.1 gain that occurred between April and May. The demand for increased production of war goods, though offset to

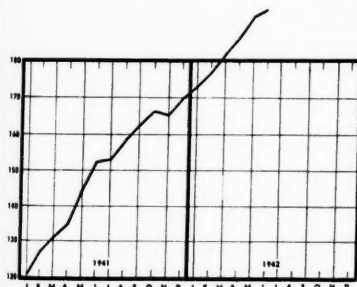


FACTORY EMPLOYMENT
(Adjusted index, 1923-25=100)

some extent by curtailment of civilian products, will nevertheless insure a continued growth in factory employment.

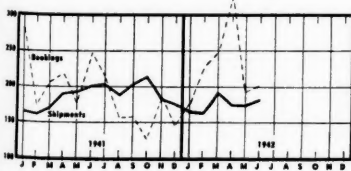
Factory payrolls, as reflected on the 1923-1925=100 index, show a slightly more accelerated rate of increase than does factory employment, early returns pointing to the June figure as 191.4, compared with 192.6 in May.

Structural steel, which rose so

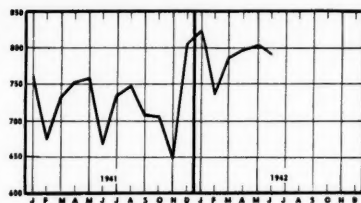


FACTORY PAYROLLS
(Index, 1923-25=100)

precipitately in April to 310,250 tons and then declined to 192,822 tons in May, rose slightly during June to 202,000 tons, bringing the half year's total to 1,365,466 tons which is only slightly above the 1,298,432 tons for the corresponding period of 1941. Shipments, which also declined in May, rose during June to 181,000 tons, or less than 3,000 tons more than for the same period last



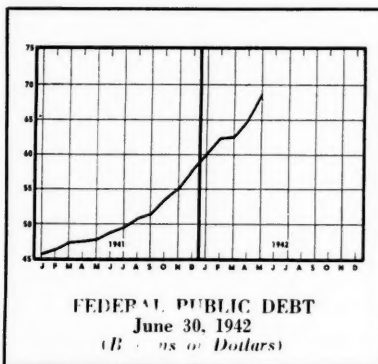
STRUCTURAL STEEL
(Thousands of tons)



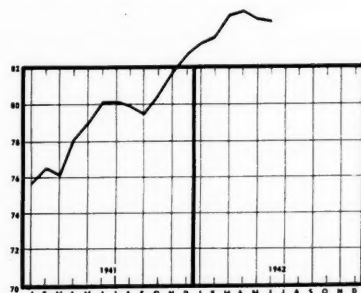
SOUTHERN PINE PRODUCTION
(Million board feet)

year. The change in government plans for construction in order to divert steel to the more essential war needs is responsible for the comparative low status of structural steel since wood is replacing steel to a considerable extent in corresponding war buildings.

Southern pine production, according to preliminary returns, amounted to



791 million board feet, maintaining the comparatively steady production of the past several months. The same reason that curtails production of structural steel is responsible for the continued output of southern pine, the demand for which remains heavy not only for new cantonments but also for war production plants needed in the industrial program. Therefore it is unlikely that southern pine production will show any



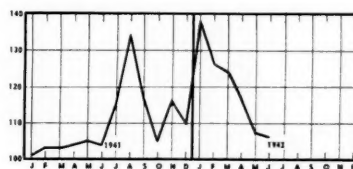
PUBLIC WAREHOUSE SPACE
(% of capacity occupied)

appreciable decrease for some months to come.

Public warehouse space occupied continues high with approximately 85% of capacity filled during June, according to available reports, though the lat-

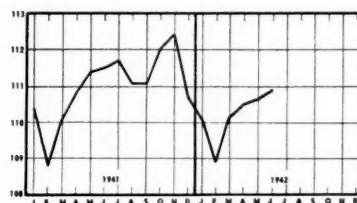
est official figures are for April when the total was 85.2%. How long this high rate of occupancy will continue it is difficult to tell since the release of goods not now being manufactured is subject in large measure to government edict and can only be accomplished after careful study of frozen stocks, compared with government needs.

Retail trade, as reflected by department store sales, on the 1923-1925=100 adjusted index, again fell sharply dur-



DEPARTMENT STORE SALES
(Adjusted index, 1923-25=100)

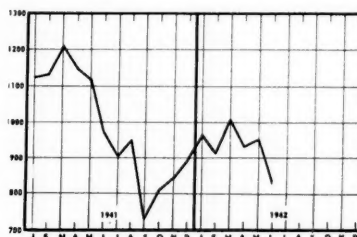
ing June to 106, clearly indicating the curtailment of civilian goods manufacturing and stocks of other goods frozen by the government. It is unlikely that there will be any appreciable increase in retail sales 'til next year; on the contrary, a further decline may be expected each month 'til the end of the year.



U. S. TREASURY BONDS
(Average price per \$100 bond)

U. S. Treasury bonds average price, which rose slightly in May to 110.7, continued the upward trend with a similar increase to 110.9 in June. As anticipated, the early decline following the outbreak of war was only temporary and the bonds are now recouping their former loss.

Commercial failures again declined during June to an estimated total of 832 from 955 in May when liabilities were \$9,839,000. It is expected however that failures will now start to increase again due to unavoidable circumstances brought about by the war.



COMMERCIAL FAILURES
(Total number)

New Helium Production Plant Announced

Helium, the rare and noninflammable gas of which the United States Government possesses a world monopoly, will be produced in greatly increased quantities to meet expanding wartime demands under a program recently inaugurated by the Bureau of Mines.

Millions of additional cubic feet of lightweight helium will flow from the Bureau's enlarged helium plant at Am-

to guard cities and areas against airplane attacks.

The United States many years ago recognized helium as a valuable natural resource and took initial steps for its conservation and protection, with the result that today this country has a virtual monopoly on the world's supply. In 1925 the Bureau of Mines was placed in charge of the Government's first full

cause its supply of helium-bearing natural gas was near exhaustion. In 1929 the Bureau designed and constructed the present plant near Amarillo, and the entire Cliffside field of 50,000 acres was brought under Government control.

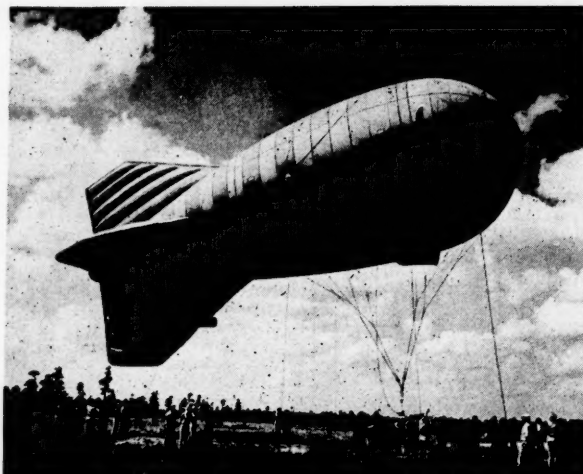
During the past 12 years the Bureau has produced over 100 million cubic feet of helium from this field, but never had utilized the full capacity of the plant until the last year when the course of world events emphasized the value and need of this lightweight, noninflammable gas.

One of the "inert" gases, helium is noncombustible, odorless and tasteless. It was discovered shortly after the Civil War by examinations of the incandescent gaseous protuberances of the sun with a spectroscope, and its subsequent development into a commodity produced by the millions of cubic feet is an exciting and colorful story. It was first known in the gases surrounding the sun, then in minerals, and later as a component part of certain natural gases.

Helium production from natural gas, in the process employed at the Bureau's Texas plant, simply involves the separation, or isolation by low temperature fractionation, of the helium from other gaseous constituents. Bureau engineers state that natural gases containing helium are widely scattered over the United States, but only a few localities have been discovered in which the helium content of the gases and the reserves are adequate for large scale production at low cost.

In addition to filling blimps, the U. S. Navy uses helium for observation and meteorological balloons, for diving operations and for other purposes connected with fleet operations. Breathing

(Continued on page 44)



To inflate the Army's growing number of blimps and barrage balloons with helium, a new plant will be established to extract the now inflammable gas from helium-bearing natural gas.

arillo, Texas—the only helium operating plant in the world. This helium will be processed from gas produced from Government wells now in operation in Texas. In addition, a new helium production plant at an unannounced location will be supplied with helium-bearing natural gas from an existing pipe line transporting gas for fuel markets.

A new Congressional appropriation of \$4,000,000 to be made available from Navy Department funds, will enable the Bureau of Mines to effect the expansion of its helium-producing program and comply with requests of the U. S. Army and Navy for more helium to inflate blimps and barrage balloons and for deep-sea diving. The increased funds also will provide additional helium for medical and scientific uses, of which there are many today.

To date, the helium needs of military and civilian establishments have been met through the Amarillo plant which has been expanded considerably within the past year. Under the new program, helium production will be several times larger than that of the past year.

Practically all of the helium produced last year was used for military and governmental purposes, and the same will be true this year. A considerable portion of it will go into blimps on the coastal submarine patrols and for training men for barrage balloon operations

scale plant near Fort Worth, Texas, which was closed a few years later be-

War Statistical Progress Report

United States Authorized Program and Purchases
June, 1940, to Latest Reporting Date

	Authorized Program As of June 30 (In millions of dollars)	Disbursements As of June 30 (In millions of dollars)
Total	\$169,754	\$34,765
Army	84,468	15,650
Navy	47,420	10,211
Lend-Lease	18,410	4,098
Other war agencies	19,456	4,806

(In millions of dollars)

United States Program and Purchases as of May 31

Authorized program	\$164,673
Contracts and other commitments	117,900
Disbursements	30,642

Sales of War Bonds

Cumulative, May 1941-June 1942	\$ 6,657,000,000
June 1942	\$ 634,000,000

Federal Debt Under Statutory Limitation

Outstanding, as of June 30, 1942	\$74,154,000,000
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Foreign Governmental Transactions in the United States

Total obligations, Nov. 1939-May 31, 1942	\$ 4,096,000,000
Payments on orders, Nov. 1939-May 31, 1942	\$ 3,028,000,000

PRODUCTION DATA

Plant Expansion

Government commitments for war plant expansion, June 1940-April 30, 1942; 1,644 projects	\$12,131,000,000
Private commitments for war plant expansion, June 1940-May 31, 1942; 8,227 projects	\$ 2,738,000,000

INDUSTRIAL SURVEYS

in the Seaboard Southeast

FOR MANY YEARS we have helped industry by furnishing reliable surveys on industrial locations in the Seaboard Southeast.

MORE RECENTLY we have likewise assisted numerous Government agencies by supplying authentic reports on various parts of our territory.

OUR PRIME OBJECTIVE:—To contribute to our Country's war effort in every possible way until victory is won.

INDUSTRIAL DEPARTMENT **SEABOARD** AIR LINE RAILWAY

WARREN T. WHITE
General Industrial Agent
Norfolk, Va.

NATURAL GAS

A fuel whose value has been proven by years of use in a most diversified line of industrial applications.

Natural gas has created the possibility of effortless comfort by the facility, and economy with which it fits into the home.

SOUTHERN NATURAL GAS COMPANY

Watts Building

Birmingham, Ala.

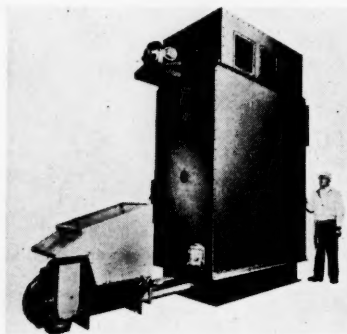
New Floating Glass Can Be Worked With Ordinary Tools

A new type opaque glass, composed of myriad tiny cells, that floats like cork and can be sawed or drilled with ordinary tools, has been put in production by the Pittsburgh Corning Corporation of Pittsburgh, Pa. Known as foaming glass, the product weighs only ten pounds per cubic foot—one-fifteenth the weight of ordinary glass—and is odorless, fire-proof, vermin-proof, and possesses insulating qualities, according to manufacturers. Its cellular structure gives the glass its buoyancy and insulating properties, and since it will not absorb water it will remain afloat indefinitely.

Unit Coal Fired Heater

Dravo Corporation, Pittsburgh, announces a direct fired coal burning heater equipped with underfeed stoker for either bituminous or anthracite coal, and either hopper or bin feed. Made in eight sizes from 750,000 to 4,000,000 B.t.u. output per hour, it is also available for hand firing with undergrate fan.

The unit is self-contained with com-



Dravo's direct fired coal burning heater with underfeed stoker.

bustion chamber, warm air distribution directly from outlet vents or through a simple duct system. Due to a simple method of warm air distribution and construction of the unit itself, 40 to 50 per cent saving in steel required for a comparable boiler plant is claimed. The heater may be installed during construction and used for temporary heat, and then retained as a permanent system.

Asphalt Sidings in Sheet Metal Field

Developed by its research engineers to fill special war-time needs, the Certain-teed Products Corporation, Chicago, Ill., announces two non-critical asphalt siding materials that may be used in many instances where metal siding sheets normally would be used. These new products—known as Certain-teed Corrugated Asphalt Siding and Certain-teed Mineral Surfaced Siding Board—were designed for use on outside walls of all kinds of structures, including factory buildings, warehouses, storage and machine sheds, dairy and hay barns, stock sheds, drying sheds, grain storage bins and similar structures. Many additional uses may be found for the products. Certain-teed corrugated asphalt siding sheets are 28 inches wide and are supplied in lengths of 6, 7, 8, 9 and 10 feet, while Certain-teed mineral surfaced board comes in sheets 36 inches and 48 inches wide of the same lengths as the asphalt siding.

New Methods and Equipment

Barricades of Lightweight Concrete Walls Filled with Sand

To replace expensive, short-lived sandbag barricades for sabotage protection around power transformers, substations and other vulnerable public utility and industrial equipment, The Celotex Corporation, Chicago, Ill., has devised an economical wall of lightweight concrete blocks filled with sand. Blocks for the wall are made with Celotex Lightweight Aggregate, an expanded blast furnace slag, readily available in all parts of the country, and offering several advantages over the traditional sandbag barricade, it is claimed, while costing from one-half to two-thirds less, and its life is many times longer. The average cost of masonry protective walls in various parts of the country is estimated at between 45 cents and 50 cents per square foot, including sand filling, compared to an estimated cost of 85 cents to \$1.50 per square foot for sandbag walls.

Ventilation for Liberty Fleet

Destined for installation on hundreds of Liberty (EC-2) 10,000-ton cargo ships under construction in Pacific, Gulf and Atlantic Coast yards, thousands of cowl ventilators are rolling off the presses of Weber Showcase and Fixture Company at Los Angeles, Cal. Enough cold rolled steel to fill 50 freight cars will have been

fed into the presses before present orders from the United States Maritime Commission are completed. These involve ventilators of eight sizes and shapes, measuring from 4 ft. 4½ inches to 8 ft. 6½ inches in height, and from 20 inches to 72 inches in diameter. Largest of the units, made of 14 gauge enamel steel, weigh 400 pounds each.

Two presses recently completed by Weber engineers will eliminate several steps once necessary in the manufacture of the ventilators which were formerly made by a combination of pressing, rivet-



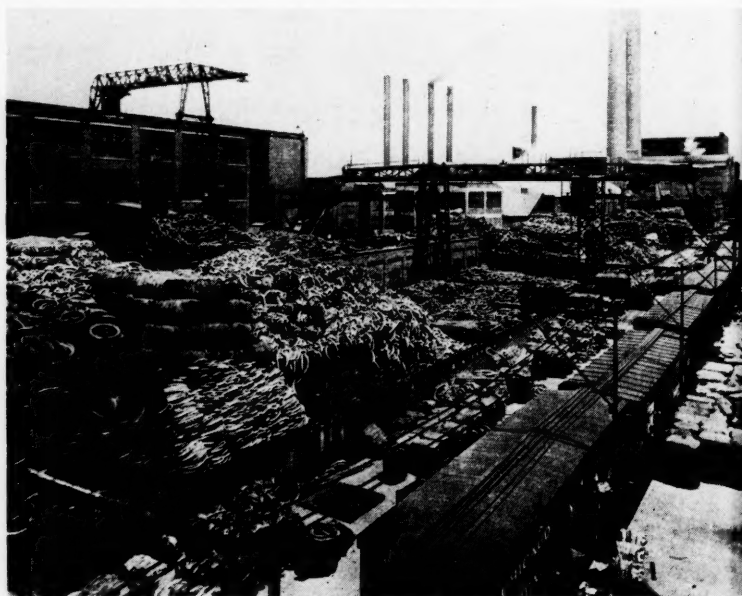
ing and hammering. From a single sheet of steel, one of these presses will form in a single operation one-half the unit. Later, the halves are welded together to form the complete ventilator.

Weighing 210 tons, the press rests upon a thick bed of concrete, its base surrounded by concrete walls 6 feet thick. While delivering against its huge steel bed, which contains 96 square feet of area, a force of 1100 tons per square inch, its action is so gentle during the drawing process that virtually no shock is transmitted through the earth to nearby workers. Carrying a stroke of 84 inches, the press can draw steel from a flat sheet into a shape 48 inches deep.

Rubber Round-Up Needed

An accompanying illustration shows a huge pile of scrap rubber at the plant of the B. F. Goodrich Company at Akron, Ohio, but John L. Collyer, president of the company, warns that total scrap re-

ceipts for the first three months of 1942 amounted to only 50 per cent of the industry's reclaiming capacity, and said a "rubber round-up" in every community of the nation is needed.



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MANUAL PRESSURE Can't Slow THE WORKING SPEED

of A MALL GEARED HEAD GRINDER

The pressure-free, high torque in the working tools on a MALL Geared-Head Grinder assure maximum production, a higher quality product, and more output per man-hour. These units can be roiled to the work. The light weight tools minimize operator fatigue. The constant high speed increases tool life and reduces spoilage. Maintenance cost is low. And, the electric power is shut off when unit is not in use. Full ball-bearing, quickly interchangeable straight and angle spindles can be furnished for every Grinding, Disc, Cone and Drum Sanding, Drilling, Filing and Polishing job. This three-shift performer will repay its cost in any shop—Write TODAY for full details and prices and ask for a FREE Demonstration.

★ ★ Manufacturers of Portable Electric Saws, Drills and hundreds of other portable power tools and attachments.

MALL TOOL COMPANY 7712 South Chicago Ave., CHICAGO, ILLINOIS

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KEEP YOUR BELTS RUNNING

1. Inspect your belts and fastenings frequently.
2. If you find that the lacing is badly worn and the belt joint is badly frayed or worn relace the belt with Alligator Steel Belt Lacing.
3. Don't throw worn belting away. Worn belting can be reconditioned or you can easily make up a serviceable belt by cutting out the best sections of old belts and then splicing them together with Alligator Steel Belt Lacing.
4. Be sure and use the size of Alligator Steel Belt Lacing recommended for the thickness of belt to be spliced.
5. Where belts are to be laced that are wider than the standard lengths of 6, 8 or 12 inches, Alligator Belt Lacing is available in continuous lengths for any width of belt. The continuous length is easier to apply and makes a more uniform and longer lasting joint.
6. Write for our Bulletin A-60 that gives complete details on how to lace flat belts of leather, rubber, balata, canvas, from 1/16" to 5/8" thick and as wide as they come.

JUST A HAMMER TO APPLY IT

● Lacing can be applied right at the location of the belt without even taking the belt off the line shaft. Alligator has strength with long life, compression grip, is smooth on both faces and the joint is easy to take apart at any time regardless of the amount of wear.

FLEXIBLE STEEL LACING CO., 4690 Lexington St., Chicago

ALLIGATOR

STEEL BELT LACING

For more than 30 years the most universally used steel belt lacing in the world.

"I'LL PICK A QUIK-LIFT for My Hoisting Jobs"

Just Watch One Work and You'll See Why

Check the design of this new, modern and efficient hoist built in various sizes and speeds to meet your requirement on each and every particular job. Let us tell you how you can step up production and save money with a COFFING "QUIK-LIFT" Electric hoist. For dependable and economical service this hoist incorporates a maximum amount of efficiency with speed, power and durability. Heavy duty motor, lubri-sealed ball bearings, gears and pinions are of special alloy steel and are sealed and run in oil. Built in capacities from 250 to 4000 pounds with load hook or trolley suspension.

Write Today for Catalogue LG5

Coffing Hoist Co.

Danville, Illinois

Building Hot Weather Service into WISCONSIN AIR-COOLED ENGINES

● By moving a constant flow of 500 cubic feet of air per minute, at a velocity of 1000 ft. per min., at a normal engine speed of 1800 rpm. . .

And by proportioning this large volume flow of air to suit the cooling requirements of the various parts of the engine . . . directing the air currents where needed by means of baffle plates and airstream channels . . .

Wisconsin heavy-duty air-cooled engines give efficient, reliable service at extremely high operating temperatures. Cylinders, cylinder heads, valves and pistons get all the air they need for adequate heat dissipation.

Illustrated is the Model VE-4 V type 4 cyl. engine.

WISCONSIN MOTOR Corporation
MILWAUKEE, WISCONSIN, U. S. A.
World's Largest Builders of Heavy-Duty Air-Cooled Engines

New Methods and Equipment

Protective Floodlighting

Designed for general and protective lighting of homes, farms and industrial plants, a new line of inexpensive, lightweight weather-tight, porcelain enamel floodlights is announced by Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa. The units are available in four sizes—the E-8 for 75 to 100 watt lamps; E-12 for 150 to 200 watt lamps; E-14 for 300 to 500 watt lamps, and the E-16 for 750 to 1000 watt lamps.



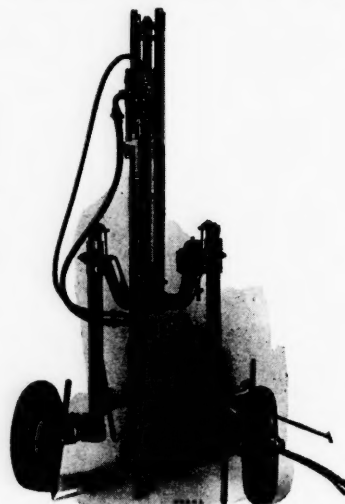
The one-piece reflector housing is made from heavy gauge sheet iron with a durable porcelain enamel finish. Maximum efficiency and durability are obtained from a white porcelain enamel inside housing separately fired. The E-8 and E-12 are particularly recommended for street and sewer repair work, protective lighting of driveways and garages, and entrances to industrial plants, while the larger E-14 and E-16 units are particularly designed for protective floodlighting of industrial plants, construction projects, and lighting freight terminals and docks.



New General Electric, Type L-68, Floodlight, made of steel. Oblique right side view as seen from the front.

Ingersoll-Rand X-71WD Drifter Drill

Among new features recently added to the well known X-71WD Drifter, manufactured by Ingersoll-Rand Company, Phillipsburg, N. J., is a positive method of blowing—method which directs more blowing air through the drill steel, thus preventing it from escaping around the sides of the shank. This is considered a major improvement over the method



X-71WD With FM2 Wagon Drill Mounting

formerly used, since it virtually eliminates the wastage of air and directs a strong, steady current to the bottom of the hole, where it is needed for cleaning.

Developed for wagon drill service, in which the drilling of deep holes is usually required, the X-71WD has a longer stroke and heavier piston than any other drill made, it is claimed, which provide strong rotation and striking force necessary to overcome the inertia of a heavy drill steel, while permitting the use of larger bits.

Executive offices of Ingersoll-Rand Company are at 11 Broadway, New York City.

Transparent Plastic Window Pane Laminated With Wire Mesh

Developed by the Plastics Division of Monsanto Chemical Company, Springfield, Mass., in cooperation with the United States Navy Department, to end the menace of flying glass, which is one of the chief dangers in an air raid, a new type window pane of transparent plastic laminated with wire mesh, which is declared to withstand the explosion of a 150-pound bomb eight feet away, has been announced by Monsanto.

The new material consists of standard 16-mesh wire screening sandwiched between two sheets of Vuelite, Monsanto's transparent cellulose acetate sheeting originally developed for fluorescent lighting fixtures. It is clear and transparent as a screened window of glass and can be installed easily in any conventional multi-paned, steel or wood sash. Sheets of the laminated plastic may be drawn or formed to almost any desired shape, but for economy panels of eight standard

sizes are recommended, ranging from 9½ inches square to 19½ by 24½ inches. Drawn with a quarter-inch flange, standard panels may be easily and quickly fastened to wood sash with an automatic stapler, then puttied to form a weather-tight, permanent installation.

New Helium Production Plant Announced

(Continued from page 40)

a mixture of oxygen and helium in a specially constructed chamber prevents a deep-sea diver from contracting the "bends," a form of paralysis resulting from a rapid change in pressure.

The Army will probably use helium for training men for barrage balloon operations to protect cities and military objectives from possible aerial attack, and in captive and motorized balloons, as well as meteorological balloons.

The treatment of asthma with helium-oxygen mixtures is an important field of use for this gas and it is being investigated further by the medical profession. More helium is required for this purpose than for any of the other "breathing" uses. Experiments are now being conducted by the Bureau of Mines and medical authorities with regard to helium as a diluting agent in anesthetics to prevent fires and explosions in operating rooms. Medical research is also being directed toward the use of helium-oxygen to alleviate tubal and sinus blocks in compressed-air workers. The same helium-oxygen mixtures employed to give relief to deep-sea divers has been applied to workers in caissons and tunnels where the pressure is considerably above that of the atmosphere.

Various other possible uses of helium in the arts, medicine, and science, are being investigated by different individuals and groups.

Throughout the years of its operation, the Bureau's helium plant has supplied this valuable gas at small cost to medical, scientific, commercial and governmental enterprises, and has endeavored to keep the price low enough to make it available for all who needed it.

New Railroad Equipment

Class I railroads put 44,546 new freight cars in service in the first five months of 1942 according to the Association of American Railroads. Of this number, there were 30,177 box, 12,498 coal, 1,037 flat, 207 refrigerator, and 627 miscellaneous freight cars.

New freight cars on order on June 1, 1942, totaled 49,548 compared with 65,047 on the same day last year. Class I railroads had on order on June 1, this year, 20,126 box, 24,546 coal, 2,803 flat, 1,197 refrigerator, 300 stock, and 576 miscellaneous freight cars.

Railroads in the first five months of 1942 installed 292 locomotives of which 119 were steam and 173 were electric and Diesel. New locomotives on order on June 1, totaled 950 which included 395 steam and 555 electric and Diesel.

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FOR

Strand
FLEXIBLE SHAFTS

1905 1942

FLEXIBLE SHAFTS AND MACHINES
MANY TYPES AND SIZES


HORIZONTAL



ROTARY
FILES
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Attachments
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Hundreds
of
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**"PENNSYLVANIA"
REVERSIBLE HAMMERMILLS**
(Patented)

Central Feed REVERSIBLE Hammermills are the most outstanding advance in Hammermill design in 20 years. REVERSIBILITY is an exclusive "Pennsylvania" feature. For Limestone, Cement Rocks, Gypsums, and a wide variety of Chemicals and Industrial Minerals. No Hammer turning. Adjustable Cages. Anti-friction Bearings. STEELBUILT fabrication. Tramp Iron protection. Capacities 5 tons to 600 tons hourly. Patented. Bulletin No. 1030.

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1705 Liberty Trust Bldg., Philadelphia, Pa.
Offices in Principal Cities
Associated with Fraser & Chalmers Engineering Works, London, England.



Mr. Check says:

**"J&L PERMASET
Pre-formed Wire Rope
is economical."**

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WIRE
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JONES & LAUGHLIN STEEL CORPORATION
AMERICAN IRON AND STEEL WORKS
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GRATING & TREADS**

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SEND FOR FREE SAMPLE &
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2700 EAST FIFTH AVENUE
GARY, INDIANA

JULY NINETEEN FORTY-TWO

45

Industrial News

Houser Named Consultant On Industrial Conservation

Arthur M. Houser, Engineer of Standardization, Crane Co., Chicago, has been appointed consultant in the Simplification Branch of the Bureau of Industrial Conservation of the War Production Board, Washington, D. C. Since the Boiler Code Committee of the A. S. M. E. was formed in 1911, Mr. Houser has devoted most of his time to standardization work. He was one of the founders and an early chairman of the Manufacturers Standardization Society, and has been active on numerous committees and subcommittees ever since, having written many articles on various phases of the subject. His experience should eminently qualify him to be of great service to the country in eliminating needless waste in simplifying and standardizing the manufacture of countless products so vital in the country's all-out war effort.

Haering Organization Has Rapid Growth

D. W. Haering Organization has made a further expansion of several thousand feet of office space in the Engineering Building, Chicago. From a one-man concern in 1931, these industrial engineers have grown to a national organization playing an important part in the industrial war effort.

Recent additions to the staff include well known chemists and other scientists, besides transference in some cases of laboratory workers to field service. Among these, J. C. Dickinson has been assigned to field work in Jacksonville, and John D. Noyes to field engineering at Miami, Florida.

To Handle Acme Steel Sales in N.C. and S.C.

According to Frank H. Webb, S. E. Sales Manager, Atlanta, Ga., for Acme Steel Company, Chicago, K. J. Pedersen, with Acme for 20 years, has been transferred from Florida to Charlotte to handle sales in the two Carolinas. His headquarters will be at 2243 Selwyn Avenue, Charlotte.

Headquarters Moved to Louisville

To strengthen the company's service, headquarters of the Aluminum Powder Division of the Reynolds Metals Co. are being moved from Richmond, Va., to 2500 South Third Street, Louisville, Ky. Following the resignation of C. D. Kuck, I. P. Macauley, Vice President, will be in charge.

Worthington Pump Plant Awarded Navy "E"

Highlighting 95 years of service to the United States Navy, the plant of the Worthington Pump and Machinery Corporation at Harrison, N. J., on June 26, was awarded a Navy "E" pennant for excellence of production. Rear Admiral Henry A. Wiley, USN, Retired, made the presentation, and Hobart C. Ramsey, vice president in charge of operations, accepted on behalf of the Worthington organization. Other speakers were Mayor Frederick J. Gassett of Harrison, and Leslie C. Ricketts, Harrison Works Manager. A tribute to the toil and zeal in the war effort of the Worthington workers was paid by Lt. John P. Bracken, USN, former assistant navigating officer of the U.S.S. Marblehead. At the conclusion of ceremonies, Admiral Wiley presented Navy "E" button insignia to Worthington employees of various departments and divisions of the Harrison plant.

Somerville Succeeds Late Robert Gilmore in Jones and Laughlin Organization

P. P. Somerville has been appointed to succeed the late Robert Gilmore as General Manager of the Jones & Laughlin Steel Corporation of Pittsburgh, Pa. Mr. Somerville's entire business experience has been in the wire rope business, joining the Williamsport Wire Rope Company in 1929 and in 1938 going to Jones & Laughlin.

Elwell-Parker Elects Officers

Directors of Elwell-Parker Electric Company, Cleveland, Ohio, have elected new officers following the death of President Morris S. Towson on March 17. Present officers are: S. K. Towson, President and General Manager; W. A. Meddick, Vice President, and C. B. Cook, Director in Charge of Export and Government Sales, and General Sales Promotion.

Watt Made General Sales Manager Baldwin Locomotive Works

Effective July 1, R. Nevin Watt has been appointed general sales manager of the Baldwin Locomotive Works, Philadelphia, Pa. He will have general supervision over all sales of the Locomotive and Ordnance and Standard Steel Works divisions, products of which include steam Diesel and electric locomotives, ordnance material, Diesel engines, steel forgings and castings, and rolled steel products.

400,000 Horsepower of Diesel Engines Installed in 391 Vessels of Merchant Marine

More than 400,000 horsepower of Diesel engines were installed in 391 vessels added to the country's merchant marine in 12 months, according to B. B. Williams, president and chairman of The Cooper-Bessemer Corporation, a leading engine builder with plants at Mount Vernon, Ohio, and Grove City, Pa. New Diesel-powered vessels added to the merchant fleet, according to Mr. Williams, range from small wooden cargo craft of 7 gross tons and 45 horsepower up to large steel tankers of 11,355 gross tons with 7500 horsepower.

Winters Made District Manager of Portland Cement Association

R. W. Winters, for the past seven years district engineer in charge of the Oklahoma City office of the Portland Cement Association, Chicago, Ill., has been appointed District Manager of the Association with offices in Kansas City, Mo. He will have charge of the Association's work in Kansas, Oklahoma and Western Missouri. A graduate of the School of Mines, University of Pittsburgh, Mr. Winters joined the staff of the Association eight years ago, working in Kansas and Oklahoma.

Trade Literature

COLLECTION OF WAR-USE SALVAGE

Booklet—illustrated, revealing how an industrial concern enabled its home community to establish what is believed to be a record for the collection of war-use salvage; copies of the publication are available to business enterprises and to civic leaders.

Lukens Steel Company, Coatesville, Pa.

PRICE REDUCTIONS

Folder—In accord with its policy of reducing prices when possible to do so without lowering the quality of its products, the Elastic Stop Nut Corporation, 2330 Vauxhall Road, Union, N. J., has issued a folder announcing reductions in prices of 415 items of Anchor, Gang-Channel, and Instrument Mounting types of Elastic Stop Nuts.

INDUSTRIAL WOOD FENCES

Booklet—illustrating and describing industrial wood fences. Contains detailed designs of various types for plant protection. Basic plans susceptible of variation are shown; methods of fastening boards to rails and information of sizes, grades of lumber and footing.

Copies from H. C. Berckes, Secretary-Manager, Southern Pine Association, New Orleans.

BARN HARDWARE AND EQUIPMENT

Catalog 75—162 pages of farm building plans and equipment, commemorating 75th anniversary Loudon Machinery Co. Attractively prepared and liberally illustrated. The Loudon Machinery Company, Fairfield, Iowa. Branches—Albany, St. Paul and Toledo.

AIRCRAFT EQUIPMENT

Catalog—Section No. 6, illustrating and describing aviation equipment, and presenting "the answer to production and servicing problems in the Aviation industry."

Lyon-Raymond Corporation, Greene, N. Y.

PICTORIAL RECORD OF WAR PRODUCTION

Booklet—"Building Production Morale," a pictorial record of Northern Pump Company, Navy Ordnance Plant, production operations and morale methods; publication explains methods used by the management, workers, and naval personnel at the plant in developing morale which won the Navy "E" and drove the plant fully two years ahead of contract schedule. Copies available from United States Navy, Branch Public Relations Office, Minneapolis, or Northern Pump Company, Minneapolis.

AMSCO MANGANESE STEEL

Bulletin No. 642-C—illustrating and describing AMSCO Manganese Steel for crusher, grinding mill and pulverizer parts. American Manganese Steel Division, The American Brake Shoe & Foundry Company, 389 E. 14th St., Chicago Heights, Ill.

HEAT FOR VARIOUS REQUIREMENTS

Booklet—illustrating and describing Ross heating equipment for all processing industries requiring low, medium or high temperatures for conditioning, drying, baking, finishing, etc.

J. O. Ross Engineering Corporation, 350 Madison Avenue, New York City.

PLATFORM TRUCKS

Bulletin No. 1263—illustrating and describing Atlas Platform Trucks, Types 2-LWH and 3-LWH.

The Atlas Car & Manufacturing Co., Cleveland, Ohio.

APPLICATIONS OF THE LAMINATED SHIM

Booklet—8 pages, presenting a history of the development of industrial and mechanical applications of the laminated shim, describing its use for fitting machine parts in original assembly, as well as for making service adjustments.

Laminated Shim Company, Inc., Glenbrook, Conn.

ROTARY POSITIVE BLOWERS

Bulletin 22-23-B-11—20 pages, illustrating and describing rotary positive blowers, showing many installation views, with details of constructions, etc.

Roots-Connersville Blower Corporation, Connersville, Ind.

ADVANCED DESIGN HOISTS

Catalog No. G-6—illustrating and describing Coffing products, including advanced design hoists and other products, and showing some of their applications.

Coffing Hoist Company, Danville, Ill.

CARE OF ELECTRIC MOTORS

Maintenance Handbook—"Guide to Wartime Care of Electric Motors" dealing with the proper care of electric motors, including correcting misalignment "by ear," removal of dust, five ways to dry out motor, etc.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

TENTS

TARPAULINS

WINDBREAKS

ROAD MATS

CONTRACTORS' SUPPLY DEALERS in every state sell the **Fulton line. Specify SHUREDRY and FULTEX Tents, Tarpaulins, and Windbreaks — anything made of canvas.** — Fulco

Road Mats and Burlap. If dealer cannot supply you, ask our nearest plant for catalog

write for Prices

Fulton Bag & Cotton Mills
Manufacturers since 1870
Atlanta St. Louis Dallas Minneapolis
New York New Orleans Kansas City, Kan.

1942 Construction Expected to Pass \$13,500,000,000

War construction is running at a rate of about \$12,500,000,000 a year, it is estimated by the War Production Board.

A further increase in building is expected to send the volume of essential construction past the \$13,500,000,000 mark by the end of the year—topping by 20 per cent the total construction for 1941, when an all-time record was set.

The construction industry has been converted almost entirely to work directly connected with the war effort. Of construction put in place through mid-June, all but 22 per cent was for airfields, war plants, camps, shipyards, war housing and the like.

Last year non-essential civilian construction amounted to approximately \$4,000,000,000 and it has been falling off sharply since that time. In the first quarter of this year such construction totaled approximately \$215,000,000—or an annual rate of about \$850,000,000.

Research on Nickel at Mellon Institute

The International Nickel Company, Inc., New York, N. Y., has resumed investigational work at Mellon Institute of Industrial Research, Pittsburgh, Pa., by establishment of an Industrial Fellowship that began operation on July 1. This Fellowship is concerned with a comprehensive program of scientific research on certain problems in the chemistry and technology of nickel, embracing particular attention to the preparation, properties, and uses of nickel compounds, especially organic derivatives. Dr. John G. Dean, a physico-organic chemist, is the incumbent of this Fellowship.

Jones & Laughlin Expansion

The Jones & Laughlin Steel Corporation, Pittsburgh, increased its annual steel ingot producing capacity approximately one million tons recently when it took over the Otis Steel Company, Cleveland, in a 39 million dollar transaction.

H. E. Lewis, president of Jones & Laughlin said, "Foremost consideration will be given at both properties to getting out the greatest possible production of steel for war. The workmen at Jones & Laughlin and Otis have made many outstanding production records of which they have the right to be proud."

The sale was ratified by Otis shareholders on April 24th in line with a contract between the companies entered into in February. An operating, marketing and distributing center at Cleveland was listed among other advantages J & L gains by the transaction. E. J. Kulas, former president of Otis, becomes a director of Jones & Laughlin and vice-chairman of its executive committee.

A PAIR OF IRON BODY VALVES FOR CONTINUOUS SERVICE

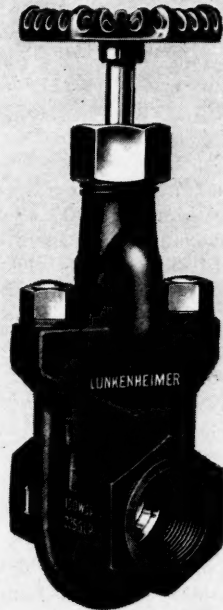


Fig. 1640 I.B.B.M. "King-clip" Gate



Fig. 1644 All-Iron "King-clip" Gate

On lines where uninterrupted service is essential . . . which means *all lines* in these critical times . . . you'll do well to use these two Lunkenheimer iron body gate valves.

They are built to stand up under rough, hard usage . . . to stay tight and to give the added long service life so necessary now when replacement time is so important.

You can use them to advantage in the many places where small gate valves are used. Fig. 1640 has wide application on steam, oil, gas, water and gasoline lines and Fig. 1644 on many corrosive lines.

Once installed, these quality valves will do their part well.

Since virtually all materials used in the manufacture of valves are on the list of critical materials, valve users are urged to furnish the highest possible preference ratings on their orders. This will be of mutual helpfulness.

ESTABLISHED 1862
THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U.S.A.
NEW YORK CHICAGO
BOSTON PHILADELPHIA
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

LUNKENHEIMER VALVES

5-84C-62

47

Building Defense Plants In England

(Continued from page 25)

about every 10 feet along the production lines, speed up work remarkably well.

"As for rebuilding a post-war London, a great deal is going to depend upon one major development—the electrification of all railroads entering the city, bringing the trains into the city underground, all of which was done 30 years ago along Park Avenue in New York City.

"A committee of British architects plans to visit this country in the near future.

"I feel sure that London will rebuild much as America is building today. By that I mean there is a visible trend here to a type of building we feel sure is the best under all circumstances—the modern skeleton frame, either steel or concrete, with great windowed areas, some with special glasses you now have to reduce glare and absorb sun-ray heat. Incidentally, I am taking back samples of such flat glasses.

"A modern skeleton frame build-

ing stands up to bombing very well and the damage is usually local. Walls are knocked in or sucked out but the structure still stands. When the same thing happens to wall-bearing buildings they, of course, collapse and are a total loss.

"We now really appreciate the desirability of thin walls, consisting of structural and other glasses or some other thin material. Such walls can be combinations of transparent glass, of translucent and opaque glass, and while war is a horrible thing it should serve to create a world of beautiful, completely utilitarian types of buildings everywhere."

Mass Production of Anti-Aircraft Guns

(Continued from page 29)

drawal successful.

The 90 mm gun, a picture of which appears on the defense-series 2-cent stamps has replaced the 3-inch size as the standard anti-aircraft gun for the Coast Artillery. Usually it is used in batteries of four, controlled by a director with which each gun is con-


nected and which automatically transmits to dials the correct angles of elevation and direction. The gun crew has only to feed the loader and follow the dial pointers. Data needed to direct the action of batteries may come from radio locators, listening posts or other sources. In the case of batteries protecting civilian areas, the far-flung system of air raid warning will be used. This gun is a considerable improvement over the 3-inch type, giving batteries greater range and more punch. Its rate of fire is slightly lower than that of the 3-inch gun, but the projectile of the 90 mm is slightly more than three and a half inches in diameter and much heavier, weighing about 21 pounds. It is used against high-flying aircraft.

Where Our Rubber Goes

(Continued from page 21)

duced and that they are produced in the quantities needed. The South also has the wonderful opportunity, through chemical research and by farsighted vision, of pioneering and developing a new industry.

Hand and Windmill Well Pumps Tank Pumps, Cylinders and Accessories Hand and Power Sprayers, Spray Pumps Nozzles and Fittings	MYERS PUMPS AGRICULTURAL - COMMERCIAL - INDUSTRIAL  The F. E. Myers & Bro. Co. ASHLAND, OHIO, U. S. A.	Deep Well and Shallow Well Plunger Type and Ejecto Type Pumps and Water Systems Pump Jacks and Centrifugal Pumps
---	---	---



Pumps— Deep-Well Plunger and Turbine
Strainers— and other well supplies
WATER PRESSURE SYSTEMS
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PERFORATED METALS
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Stewart Chain Link Wire Fence Style 5TH

A STEWART FENCE... discourages trespass and invasion

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 963 Stewart Block
 CINCINNATI OHIO

Stewart IRON and WIRE FENCES



MANUFACTURERS RECORD FOR

Relative Scarcity of Metals, Chemicals and Other Materials Group III, Miscellaneous Products

(Continued from page 23)

Lignin extender for Plastics
Lime
Lithophone
Lumber and Millwork
Low Grades Soft and
Hard Wood
All Grades Gums
All Grades White Pines
Mica, Ground
Mineral Wool
Paper (ex. Cellophane)
Paperboard
Peanut Oil
Petroleum Products
Crude Oil
Gasoline

Lubricating Oil
Plywood (unrestricted binder)
Pottery
Refractories (domestic)
Andalusite
Dumortierite
Kyanite
Rosin and Derivatives,
except Ester Gum
Salt
Silica Sand
Soybeans, Oil, Protein
Spodumene
Starch, Domestic
Stone, Granite
Limestone
Marble

Slate
Soapstone
Straw
Sugar
Sulphur
Sunflower Seed Oil
Titanium Pigments
Tripoli
Turpentine
Vermiculite
Wallboard
Wood and Products
Sawdust
Wood Fiber
Wood Flour
Zinc Oxide (Am. Process)

The Navy's 70-Ton "Mars"

(Continued from page 27)

a final look, at the same time furnishing the comparison by which the great size of its mammoth companion could be readily observed.

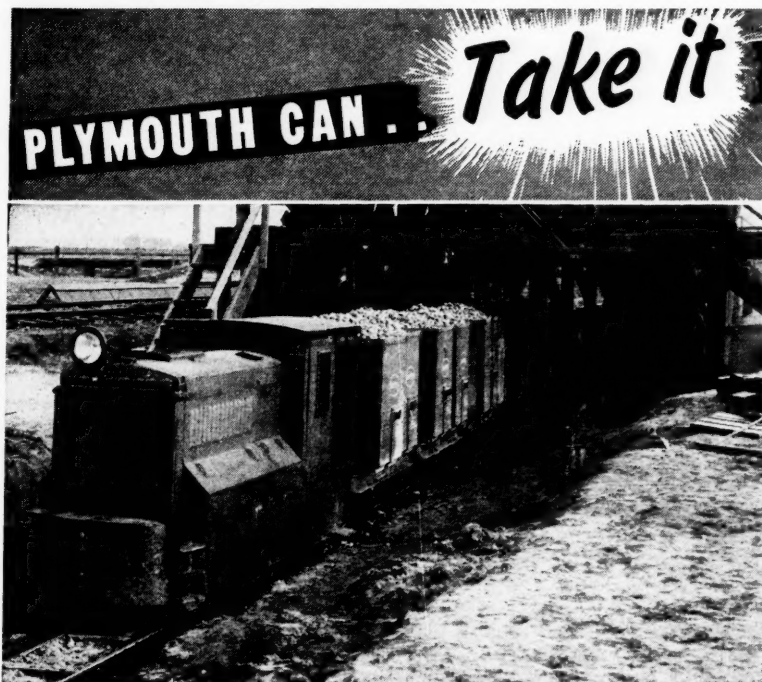
The wing spread of the Navy Grumman seemed insignificant against the 200-foot reach of the Mars' wings. These wings weigh 20,000 pounds and are large enough in the middle sections to allow a full grown man to stand erect. The cubic content of the hull is as large as that of a 15-room house. This air monster is propelled by four motors, which are the most powerful now in service. Their power is twice that of a two-car diesel-electric locomotive.

So potent are the engines, that the seventy tons of the Mars rose as easily and gracefully in flight as if it were of feather buoyancy.

Presence of certain Navy officers at the test suggested future operation of troop transportation by air instead of by surface craft as at present. According to a Martin announcement, the Mars has ample fuel capacity to fly to Europe and back without stopping. Rated as a patrol bomber, the big ship could carry a good sized cargo. As a troop transport, it could rush men 150 at a time, fully armed, to those points where quick shifts would be necessary. Larger aircraft, that might be similarly used, are now being planned, according to Martin Vice President Ebel.

Historically, say Martin officials, the Mars dates back to 1937, when the Navy decided to build the largest flying ship in the world. After their company had won the

(Continued on page 56)



***Takes* a bigger load... *Takes* it faster
Takes rough usage without a "let down"**

● If you want to see how much your daily tonnage capacity can be increased, how much time and money can be saved on haulage—put a Plymouth Locomotive on the job. Plymouth has POWER—to pull more tons per load; SPEED—to keep loads running on time; RUGGEDNESS—to stay in steady service on tough, punishing jobs in quarries, in sand, gravel and clay plants, in batch plant and yard duty. Add to these the easy operation, the extreme flexibility and the marvelous economy of this gasoline-powered locomotive and you see why "Plymouth means Performance"—at its best.

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**PLYMOUTH GASOLINE and DIESEL
LOCOMOTIVES**

PLYMOUTH LOCOMOTIVE WORKS

Division of The Fate-Root-Heath Co. PLYMOUTH, OHIO, U. S. A.

New Industrial Plants and Expansions in the South

(Continued from page 37)

In service on May 22; construction begun in 1942 on a third 40,000 kilowatt unit which is scheduled to go in service in June 1943; among important additions to the transmission system are the following: A 66,000 volt transmission line constructed; this line extends 17 miles from Macon to Wellston, a 9000 KVA substation built at Wellston, completed late in May; a 19,000 volt transmission line and 4500 KVA sub-station to serve the National Traffic Guard Co., near Atlanta; a new 12,000 KVA sub-station and an extension of a 110,000 volt transmission line to provide additional capacity near Columbus; a 2000 KVA sub-station at Conley, a 7500 KVA stepdown sub-station is being installed at Morrow; preliminary work is also underway on the construction of a 110,000 volt transmission line extending 100 miles from Vidalia to Brunswick; a 7500 KVA sub-station will be constructed at Brunswick; this line will serve the Brunswick Marine Construction Corporation which will build cargo vessels for the U. S. Maritime Commission; line scheduled to be completed November 15; work will be begun this year on a 110,000 volt transmission line to serve the Bell Aircraft Corp.'s plant near Atlanta; plans indefinite at this time, expected to be completed on Jan. 1, 1943; combined cost of these enlargements and extensions of the transmission system and others not listed will be \$1,700,000; miscellaneous extensions and improvements to distribution system will require about \$2,500,000 for this year.

EATONTON—creamery—Eatonton Cooperative Creamery, Inc., J. C. Park, Mgr., will erect building; 68x83 ft.; 1-story; brick; cement and tile floors; hollow tile partitions; receiving competitive bids; cost \$25,000.

KENTUCKY

Pipe line—Kentucky-Tennessee Natural Gas Corp., Louisville, applied to State Public Service Commission, Frankfort, for permission to construct and operate gas pipeline from Himyar field in Knox county to Middlesboro and then to Knoxville, Tenn. and Alcoa Aluminum Co.'s plant at Alcoa, Tenn.; hearing June 17.

LOUISVILLE—plant—Joseph E. Seagram & Sons Co., Seventh St. Rd., H. Fred Wilkie, vice president in charge of plant operation, planning to install a rubber plant, adjoining company's present distilleries, to produce butadiene for synthetic rubber from alcohol; capacity 4000 lbs. daily.

NEWPORT—plant—Federal Defense Plant Corporation will construct steel plant on a 10-acre site; will contain 3 electric furnaces; cost \$2,000,000; will be operated by Andrews Steel Co.

LOUISIANA

Recycling plant—Phillips Petroleum Co., Texas Co., Humble Oil & Refining Co., Tide-water Associated Oil Co. reported, start work soon on recycling plant in Erath field of Vermilion Parish of southern Louisiana; Federal permit granted.

LAKE CHARLES—refinery—Cities Service Oil Co., 70 Pine St., New York, may construct a \$75,000,000 oil refinery; option obtained on site of 2600 acres.

NEW ORLEANS—administration building—Walter B. Moses, chief engineer of Higgins Corp. received bids June 25 for construction of new administration building to contain about 110,000 square feet floor space; following are prospective estimators: Lionel F. Favret, 937 Gravier St.; Perrillat-Rickey Construction Co., S. Rendon and Eve St.; J. Gordon Lee, Carondelet Bldg.; Otis W. Sharp & Son, Inc., 1838 Robert St.; Gervais F. Favrot, Balter Bldg.; George J. Glover Co., Inc., Whitney Bank Bldg.; Chris Larsen Co., Maritime Bldg.; John Riess, Carondelet Bldg.

NEW ORLEANS—office, etc.—J. G. White Engineering Corp., Interstate Bank Bldg. Engrs., received bids June 23 for construction of office annex, fire station, addition

and changes to yard office and miscellaneous work in permanent office at Louisiana Shipyards, Inc. on Florida Ave. at Industrial Canal; following are prospective estimators: John Riess, Carondelet Bldg.; Chris Larsen Co., Maritime Bldg.; Pittman Brothers Construction Co., 2500 N. Galvez St.; George J. Glover Co., Inc., Whitney Bank Bldg.; Boh Brothers Construction Co., 2400 Cypress St.; Lionel F. Favret, 937 Gravier St.; Favrot Roofing & Supply Co., 2530 Perdido St.

NEW ORLEANS—plant—Consolidated Engineering Co., St. Paul and Franklin Sts., Baltimore, Md., and George A. Fuller Co., 1138 Munsey Bldg., Washington, D. C., additional estimators, bids opened June 29, for plant building; Albert Kahn, Inc., Detroit, Mich., Archt.-Engrs.

MARYLAND

FAIRFIELD—electric distribution system—Bethlehem Fairfield Shipyard, Inc., received bids June 30 for electric distribution system; Consolidated Engineering Co., 20 E. Franklin St. and Cummins Construction Corp., 803 Cathedral St., both Baltimore, estimating.

FAIRFIELD—addition—Maryland Dry Dock Co. received bids July 1 for addition to office building; Leimbach & Williams, Inc., 30 W. Biddle St., Baltimore, and Cogswell Construction Co., 406 Park Ave., Baltimore, estimating; J. E. Greiner Co., Engrs., 1201 St. Paul St., Baltimore.

HAGERSTOWN—expansion—Fairchild Aircraft Co. will increase production area of plant by erecting new unit to be used for cafeteria in addition to production space; air conditioned.

MIDDLE RIVER—building—Consolidated Engineering Co., 20 E. Franklin St., Baltimore, and Henry W. Horst Co., Philadelphia, Pa., additional estimators, bids opened June 16 for accounting building for Glenn L. Martin Co.

SALISBURY—panel work, etc.—McCloskey-Grant Corp., 20th & Indiana Ave., Philadelphia, Pa., leased building of Jackson Shirt Factory on Salisbury Blvd. for wood-work specialties.

MISSISSIPPI

LAUREL—equipment—Masonite Corp. plans installing \$150,000 equipment at Laurel plant to reduce stream pollution.

NATCHEZ—plant—Armstrong Tire & Rubber Co. received bids June 22, for erection of 2-story, 334x130-ft. building; James T. Canizaro, Archt., Lampton Bldg., Jackson; following were prospective estimators: Gravier & Harper, Alexandria, La.; Brice Building Co., P. O. Box 1028, Birmingham, Ala.; B. E. Buffalo, 1574 Lamar Ave., Memphis, Tenn.; Memphis Construction Co., 168 Union St., Memphis, Tenn.; Tom B. Scott, Hart Bldg., Jackson, Miss.; E. B. Ludwig, 1350 Jefferson Highway, New Orleans; estimators on plumbing: Loftis Plumbing & Heating Co., 45 Mangum St., S. W., Hillard Plumbing & Heating Co., 62 Bartow St., N. W., both Atlanta, Ga.; J. J. Nolan & Co., 78 Washington Ave., Memphis, Tenn.; Davis Plumbing Co., 115 S. State St., Jackson, Miss.; on electrical work: Koeneman Electric Co., 849 S. State St., Shelby Electric Co., 303 E. Hamilton St., Joe Williams Electric Co., 217 S. West St., all Jackson; on sprinkler system: Grinnell Co., Inc., Carondelet Bldg., New Orleans, La.; Crowder Brothers, St. Louis, Mo.; Texas Automatic Sprinkler Co., 325 W. Trigg Ave., Memphis, Tenn.; Paine Heating Co., 204 W. Fortification St., Jackson.

MISSOURI

Addition—Airplane Division of Curtiss-Wright Corp., St. Louis, completed plans for addition to plant.

KANSAS CITY—foundry—Aluminum Co. of America will operate aluminum foundry to make cylinder heads.

NORTH CAROLINA

CHARLOTTE—webbing plant—Marjane Weaving Co., formed with \$100,000 capital with F. W. Warrington, 1618 Beverly Drive, Pres., leased building, 504 S. Graham St. for manufacture of webbing.

GREENSBORO—expansion—Morton

Chemical Co., 2110 High Point Rd. plans expansion; acquired adjoining building, install additional equipment, including a new type distillery, glass lined of 1000 gal. capacity.

GREENSBORO—Plantation Pipe Line Co., Charles Younts, Pres., Atlanta, Ga., will increase capacity of the 1261 mile oil pipe line from Baton Rouge, La. to Greensboro, N. C., 50 per cent by the addition of new electric pumps; H. B. Britton, chief engineer of the line; Westinghouse Electric & Manufacturing Co., has contract for explosion-resisting electric motors; pipe line company is owned by Standard Oil Co. of New Jersey, Standard Oil Co. of Kentucky and Shell Union Oil Co.; the 39 original pump motors are now being increased to 64, boosting the total pumping capacity from 24,000 to 51,000 h.p.

OKLAHOMA

Construction—Oklahoma Gas and Electric Co., Oklahoma City, has for its 1942 budget the sum of \$2,457,000; estimated that of this amount \$1,000,000 will be carried over to be spent in 1943; included in the budget for 1942 is a 20,000 kw. steam turbine generator for the Huey Station which is now scheduled to be delivered in May 1943, to go in service in July 1943; removal and relocation of lines in the flooded area of Denison Dam project; the above, with the miscellaneous small construction jobs, extensions to defense housing projects, etc. make up the budget.

DUNCAN—refinery—Lloyd Freese, V. P., Bell Oil & Gas Co., Tulsa, L. B. Simmons, Pres., Rock Island Refinery Co., Duncan, and associates formed Associated Refineries, Inc. to erect and operate a \$10,000,000 high octane refinery near Duncan.

SOUTH CAROLINA

BENNETTSVILLE—packing plant—Doyle Packing Co. operating in Greenwood, S. C., leased building formerly occupied by Iodine Vegetable Co. for packing plant; capacity 1500 cases daily; C. E. Barry, in charge.

CHARLESTON—building—V. P. Loftis Co., Builders Bldg., Charlotte, N. C., estimating on building for Pittsburgh Metallurgical Co., bids opened June 8.

TENNESSEE

Plant—Hedden Chemical Corp., 50 Union Square, New York, will operate plant to be erected in Tennessee.

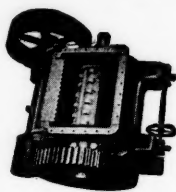
Plant—War Department authorized construction of manufacturing plant in Tennessee, to cost in excess of \$3,000,000; construction supervised by Corp of Engineers, Ohio River Division, 1420 Enquirer Bldg., Cincinnati, Ohio.

TEXAS

Carbon plant—Columbian Carbon Co., New York City, c/o M. R. Howell, 711 Ben Milam Hotel, Houston, receiving bids, no date set for carbon plant; project consists of 11 dwellings, 2-car garage; 3 warehouses; frame office building; following are prospective estimators: Allan Construction Co., 2150 Westheimer Rd.; Schneider Construction Co., 3004 W. Dallas St.; B. W. Holtz, 1318 Sul Ross St.; Forest McDaniel Construction Co., 3715 Graustark; A. Bertelsen, 2803 University Blvd.; E. B. Crawford, 2202 McDuffie; O. L. Allan, 2006 Wheeler St.; T. D. Howe Construction Co., 3210 White Oak Drive.

BROWNSVILLE—ship plant improvements—Brownsville Shipbuilding Corp., S. Finley Ewing, Mgr., applied to U. S. Engineer Office, Galveston, for permission to construct 2 wharves 70x82 ft., 17 pile dolphins and marine railway.

LONGVIEW—pipe line—War Emergency Pipeline, Inc., formed to construct 24-in. Texas-to-Illinois oil pipeline; ground surveys started to determine exact route; 550-mile conduit, with a daily capacity of 300,000 bbls. and costing between \$35,000,000 and \$40,000,000 will extend from Longview in the heart of the East Texas oil field, across States of Arkansas and Missouri to Illinois, will cross the Mississippi River at Thebes, Ill., and about 10 miles below Cape Girardeau, Mo.; War Emergency Pipeline (Continued on page 56)



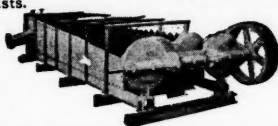
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Single and double roll and jaw crushers, hammer mills, super dry pans—steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists.

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Bevel Gears— $\frac{1}{8}$ in. to 13 ft. in diameter
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Worm gears any practical size. Backs curved
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Steel, Stainless Steel, Monel Metal, Brass,
Copper, Bronze, Aluminum, Zinc, Lead, Tin
Plate and all other metals or materials
perforated as required, and for all kinds
of screens. Send for new Catalog.

CHARLES MUNDT & SONS

490 Johnston Ave., JERSEY CITY, N. J.

Subcontractors Wanted

(Continued from page 33)

TORPEDO PARTS involving Machining of Parts from Alloy Steel and Brass Bar Stock. Machining requires Automatic Screw Machines, Broaches, Lathes, Drilling, Milling Gear Cutting, Precision Cylindrical Grinding. Material—Brass, Steel and Stainless Steel. All Forgings to be furnished by Prime Contractor. Majority of Components are to be finished to a close tolerance. A large quantity is needed, and production is to start as soon as possible. Contract by negotiation.

Ref. Roystuart-35-2

The Government is trying to locate facilities for 22 different Parts in connection with the manufacture of MACHINE GUNS. Most of these Parts require Light Production Millers of the Hand Feed Type, some Lathe Work, and Drilling. Where required, Special Forgings will be supplied. Other Parts made from Bar Stock. Most Parts require Heat Treating and Parkerizing after Machine Work. Tolerances—close. The quantity required is based on monthly deliveries of from 500 to 1,000 for an indefinite period. Production is to start at once. Contract by negotiation.

Ref. Roystuart-34-1

The Government is looking for facilities to Machine and Profile right and left hand MARINE PROPELLERS—diameter 6' 4" O.A.—Manganese Bronze—Specification 49-B-3. Hubs bored to taper $\frac{3}{4}$ " to foot, bore $13\frac{1}{2}$ " long, shaft $5\frac{1}{2}$ " diameter, finished weight 1,220 lbs. Tolerances—close. Contract by negotiation.

Ref. Escher-34-1

A New England concern is seeking facilities for items required for forty Vessels: Item (a) **Portable Gasoline Driven Pump**, one per ship required and to be in accordance with Navy Department Specification 11-P-9, dated May 2, 1938; Item (b) **Deck Winches**, one per ship required—The Supplier must **DESIGN** and manufacture a D.C. Motor Driven Marine Type Winch capable of handling a four ton load on a three part fall at a speed of 30 feet per minute with boom in any position—Winch to be equipped with gypsy heads; Item (c) **Capstans**, one per ship required—The Supplier must **DESIGN** and manufacture a Marine Type Steam or Electric Driven Capstan capable of hauling 20,000# from zero to 10 feet per minute in one minute and of hauling an unloaded line at a speed of not less than 120 feet per minute; Item (d) **Propellers**, one per ship required—The Supplier will be given necessary engineering data and must provide the Patterns, Casting and Machining Facilities to produce a Cast Iron Three Bladed Propeller 9 feet in diameter in accordance with Navy Department Specification 46-1-5 for high test Grey Iron Castings. Concerns interested in any of the foregoing items are requested to contact by mail, after careful consideration of the requirements outlined, giving a detailed description of their ability to undertake the work involved.

Ref. Roystuart-31-1

The Government requires subcontracting facilities on AIRCRAFT COMPONENTS—Streamlined Tie Rod Assemblies made from Corrosion Resistant Steel Stock and fitted with Clevis and Lock Nut at each end. Various lengths and sizes. Material: Corrosion Resistant Steel #49T9. Tolerances: medium. Quantity: 4,126 pieces. Production to start shortly. Contract by negotiation.

Subcontracts Wanted

(Continued from page 32)

motor; Niagara power shear, 12 ga. 5', $7\frac{1}{2}$ h. p. GE motor; Ohl power brake, 60 ton, 10', 10 h. p. GE motor; two power punches, 7 ton $\frac{1}{2}$ h. p. Wagner; power punch, $7\frac{1}{2}$ ton $\frac{1}{2}$ h. p. Wagner; power punch press, 15 ton 1 h. p. GE motor; power drill press, single spindle $\frac{1}{2}$ h. p. GE motor; Niagara rotary shear; Chicago power brake, steel press, 60 ton 5 h. p. Lewis Allis BB motor driven; Bliss power press, 30 ton inclinable 3 h. p. GE; Henderson power press, 40 ton inclinable; Niagara power press, single action 2 h. p. motor, 35 ton overhang; L & J power press, 25 ton; Verson power brake, 45 ton inclinable; Cleveland power punch press, 42 ton, overhang type, 3 h. p. GE motor; Bliss power punch press, 30 ton Horning 2 h. p. GE motor; Niagara power punch press, deep throat, 15 ton 3 h. p. GE; Ferra. power punch press, 25 ton single action, 2 h. p. Wagner; power punch press, 2 VO 15 ton, inclinable, 2-2 h. p. GE motors; Ohl power brake, 60 ton, 10 h. p. GE; L & A power brake, 60 ton, $7\frac{1}{2}$ h. p. GE; Bliss power press, 30 ton, Red Horning with adjustable screw attached and flywheel cut for geared motor drive; Verson power brake, 45 ton, 1 h. p. motor; Lisbor power press, 36 ton straight side, 3 h. p.; Chicago power brake, 4', 25 ton; Chicago power brake, 135 ton; trip hammer; three forges, blower; four anvils; cut off emery wheel, 30 ton; rumbler; spot welder; two Acme welders; spot welder, new 30 KVA; spot welder, 150 KVA; GE portable welder, arc welder, 200 amp.; hydraulic welder, 100 KVA; hydraulic welder, 75 KVA; two hydraulic welders; filer, 7" x 2', 14" x 6'; two ovens, annealing and hardening; cutter, straightener and cutter-wire; eight hand brakes, 3' to 8'; four hand shears, 8'; twenty-one grinders, 6" and 7" portable and bench; saw, metal; beader; nibbler; hand folder; sand blaster; saw, "Do-All" contour machine; welder, acetylene; five moulding, (stickers); twenty-four rip saws; lathe, wood; seven planers, woodworking; nine sanders, woodworking; eighteen jointers, 6", 12", 16"; lathe, wood; router, woodworking; five drill presses, wood; two saws, finishing wood; six hand saws, wood; six mortiser and tenoner, woodworking; five shapers, woodworking; three tongue and groove machines, woodworking; two dado machines, woodworking; jig saw, woodworking; three nailing machines, woodworking; two spray booths, water curtain; two spray booths, air exhaust; electric baking oven, infra-red elec.; electric drying oven, infra-red; automatic conveyers, for infra-red baking with Mono Rail System; gas oven, for lacquer; electro-plating, generator set; tank plating, electro-plating copper; tank plating, electro-plating cadmium; two tank plating, electro-plating nickel; tank plating, electro-plating chromium; four cleaning tanks; rinse tank, electro-plating; drying tank, electro-plating; cleaning tank, acid (pickle); four lathes, double end polishing; drill, glass; six polishers, glass; three grinders, beveling glass; smoother, beveling glass; five spray booths, vitreous enamel (porcelaining); oven, drying (porcelain); electric furnace, for porcelain; gas furnace, for porcelain; two tanks, dipping porcelain; four tables, brushing porcelain; six pickle tanks, cleaning porcelain enameling iron; crane, for pickle tanks; buffing machine, for enameling iron; five mills, grinding frit; stitching machine, for gasket; potentiometer, for testing; coil purging and dehydrating sys-

tem, for testing; generator, acetylene; water still, distilling water; also boilers and heating plant facilities.

NY-1. Manufacturers of Precision Springs, Scales, etc.

Two rivet bench lathes #5; Willard engine lathe, 13" x 6'; Lodge & Shipley engine lathe, 15" x 6'; Hendy engine lathe, 10" x 6'; Gardner grinder-double disc, 14" for springs; Beasley grinder-double disc end, 18"; LaSalle #2 surface grinder; Cincinnati universal tool grinder; C. H. Basly disc grinder, 20" disc; Hammond motor grinder, 14" wheels; Warner-Swasey #1 hand screw machine, $\frac{5}{8}$ "; Warner-Swasey #1 (New) hand screw machine, $\frac{5}{8}$ "; two Warner-Swasey #2 hand screw machines, 1"; two Brown & Sharpe #0 automatic screw machines, 9/16"; Pratt & Whitney #3 hand screw machine, 2 1/4"; Brown & Sharpe #8 threading machine, $\frac{5}{8}$ "; Gould & Eberhard shaper, 14" swing; Cincinnati shaper, 16" swing; Barber-Colman #2 gear hobbing machine, 1 1/2"; Burke #3 gear cutter; Dwight & Slate gear cutter; Sloan & Chase #1 gear cutter; Cincinnati #2 milling machine; Cincinnati milling machine automatic, 18"; two Sloan & Chase #3 milling machines; two Sloan & Chase #1 milling machines; Bristol #0 milling machine; Cochrane #2 filling machine; thirty drill press spindles; five V & O #73 foot presses, 6" x 5"; seven Excelsior #13 foot presses, 6" x 4"; two Excelsior #73 foot presses, 6" x 9"; Hahnemann press, 6" x 8 1/4" x 10 1/4"; Bliss #19 press, 2" stroke 4 1/4" shunt ht.—10 x 18"; three V & O #0 presses, 2 1/4" stroke 7" shunt ht.—14 x 21"; V & O #4 press, 2 1/4" stroke 6" shunt ht.—20 x 28"; Bliss #305 press, 4" stroke 8" shunt ht.—24 x 24"; Perkins #800B press, 4" stroke 8" shunt ht.—26 x 38"; Bliss #18 press, 1 1/4" stroke 6 1/2" shunt ht.—8 1/2 x 14"; Bliss #30 press, 4" stroke 12" shunt ht.—29 x 29"; Bliss #39 press, 2" stroke 21" shunt ht.—16 x 8"; Excelsior #18 press, 1 1/4" stroke 6 1/2" shunt ht.—8 1/2 x 14"; two Bliss #21 presses, 2 1/4" stroke 12" shunt ht.—18 1/2 x 27"; Pexto sheet metal box brake, 60"; Pexto foot shear, 42"; Pexto foot shear, 30"; Niagara foot shear, 42"; Niagara foot shear power driven, 30"—Cap. 16GA; Pexto Power Driven square shear, cap. 14 Ga. 8'; Alligator shear, 3 1/4" jaw; Pexto double seamer, 26"; Pexto circle shear, 30"; Pexto bar folder, 36"; Pexto bar folder, 30"; Pexto roller, 30"; Federal spot welder, 20 K. W.; Marquette arc welder, 250 amp.; Bradley trip hammer, 60 lb.; Wallace #245 bender; Pels combination cutter, M-10-8879; three Divine Brothers buffing heads, double 14"; three spray booths, 4'; two low heat baking ovens, 7' x 7' x 8' steam heat; low heat baking oven, 4' x 4' x 6' steam heat; four indirect gas ovens for japanning, 42" x 6' x 6'; three dipping tanks for japanning, 2' x 6' x 33"; nickel plating tank, 2' x 6' x 31"; copper plating tank, 2' x 6' x 31"; pot furnace, 6" x 8"—188° F. max.; Stewart pot furnace, 12" x 12"—1800° F. max.; Stewart pot furnace, 18" x 21"—1700° F. max.; Stewart surface furnace, 3" x 6" x 11" D-1900° F. max.; Surface Combustion Co. #523 surface furnace, 14" x 18" x 48"—1800° F. max.; American Gas Furnace #30 salt bath, 14" x 22" x 11"—Oil Temp. 1000° F.; American gas furnace—continuous, 9" x 4" x 20"; Torrington—0 W-10 spring coiling machine, segment type .028 cap.; Torrington—1 W-11 spring coiling machine, segment type .062 cap.; Torrington—2 W-12 spring coiling machine, segment type .120 cap.; Torrington—1 W-21 spring coiling machine, clutch type .072 cap.; Torrington—2 W-22 spring coiling machine, .148 cap.; Torrington—3 W-23 spring coiling machine, .282 cap.; lathe for spring coiling—36" centers.



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For
Mercantile Building
Jacksonville, Fla.

BETTER CONSTRUCTION AT LOWER COST

THE AETNA STEEL CONSTRUCTION CO., JACKSONVILLE, FLA.

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*Structural Steel for all Industrial Structures,
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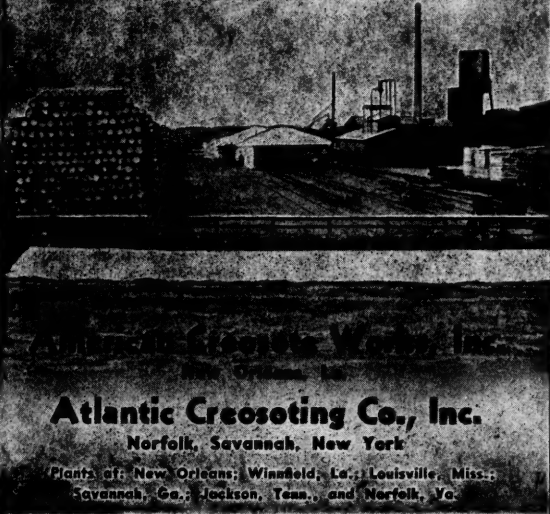
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Decay and Termite Proof—Can Be Painted

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Savannah, Ga.; Jackson, Tenn.; and Norfolk, Va.



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FIRST SQUADRON ARMORY, PHILADELPHIA, PENNA.
6,000 SQ. FT. WHITE CORRUGATED WIRE
GLASS SKYLIGHT

**SPECIFY
ORIGINAL SOLID CORRUGATED
WIRE GLASS SKYLIGHTS**

PENNSYLVANIA WIRE GLASS CO.

1612 MARKET STREET

PHILADELPHIA, PENNSYLVANIA

New Priorities Put In Effect During June

(Continued from page 34)

P-31 to complete deliveries after expiration date of original order.

Furniture (Metal Office and Equipment)—L-13-a Amend. #2 lifts restrictions on amount of steel for use in making wooden filing cabinets.

Gages, Precision Measuring Tools, Testing Instruments and Chucks—E-5 restricts distribution of instruments brought under control by WPB.

General Industrial Equipment—L-123 Int. #1 defines equipment covered by original order.

General Inventory Order—M-161 lists exceptions on manufacturers of refractory brick, including 16 materials.

Golf Clubs—L-93 Amend. #3 gives manufacturers till June 30 in which to make golf clubs.

Goose and Duck Feathers—M-102 Amend. #2 limits feathers of less than four inches in length to be received for military orders.

Honey—M-118 (as amended 6-18-42) makes several million pounds available to manufacturers but still subject to quotas. Use form PD-246.

Ilmenite—M-161 Amend. #2 adds ilmenite to Sched. A of original General Inventory Order.

Imported Canned Beef—M-172 freezes all large stocks for use by armed forces. Use form PD-555.

Imports of Strategic Materials—M-63 (as amended 6-2-42) places control over imports of commodities imported for civilian use beginning July 2: use forms PD-222-C and PD-222-B. M-63 Amend. #3 places scrap metals and alloys under import control. M-63-a releases commodities imported overland or by air from Canada and Mexico. M-63 Amend. #1 and Int. #1 changes point of control of imports under bond and changes Lists I, II and III: use forms PD-222-C and PD-222-B. M-63-b exempts finer grades of wool and sheepskin shearlings from provisions of M-63.

Incandescent and Fluorescent Lamps—L-28 Amend. #1 curtails use of critical materials in manufacture of light bulbs without curtailing production of light bulbs themselves. Use forms PD-532, 423 and 417.

Iron and Steel Scrap—M-24-c makes mandatory the segregation of alloy steel scrap and sets up classification of alloy steels. M-126 Amend. #2 permits use of iron and steel for maintenance and repair of coffee roasting machinery; eliminates manure implements from List A (they are now covered by L-140); and permits manufacture of certain tags or badges containing iron and steel. M-126 Amend. #1 exempts steel stamps used for marking metal from original order.

Istle and Istle Products—M-138 Amend. #1 tightens restrictions on istle waste and waste istle.

Jute and Jute Products—M-70 Amend. #4 places restrictions on acceptance of delivery and use of imports.

Kitchen, Household and Similar Articles—L-30 Amend. #3 removes cer-

tain restrictions on tubes (affects carpet sweepers, curtain rods, fixtures and drapery attachments).

Laboratory Equipment—L-114 prohibits sale and delivery except for certified essential uses.

Laundry and Dry Cleaning Equipment—L-91 Amend. #1 makes adjustments to original order to conform to customary manufacturing practices of the industry. Use form PD-418. L-91 (as amended 6-22-42) is re-issue of original order embodying previous amendments.

Lead—M-38-i sets lead pool for June at 15 percent of April production.

Leather (Sole)—M-80 (as amended 5-22-42) Amend. #1 permits use of frozen stocks of heavy shoe sole leather and purchase of similar quality leather that dealer had on hand May 22, 1942.

Mahogany—M-122 Int. #1 exempts mahogany receivers from terms of original order.

Materials for Officers Uniforms—P-131 grants A-1-i rating for cloth and other material needed to make uniforms for armed forces. Use form PD-25A.

Metal Signs—L-29 Amend. #1 exempts mechanical and electrical railroad, grade-crossing and highway signals from provisions of original order.

Mining Machinery and Equipment—P-56-a Amend. #3 prohibits deliveries except on rated orders. P-56 (as amended) Int. #1 provides A-10 rating for repair and maintenance material.

Motor Carriers—L-1-g forbids production, beginning July 1, of commercial type truck trailers except for use of armed forces.

Motor Fuel—L-70 Amend. #3 rescinds 50 percent cut in gas deliveries in Washington and Oregon.

Naphthenic Acid and Naphthenates—M-142 Amend. #3 specifies products excepted by amendment to original order.

Natural Resins—M-56 (as amended 6-5-42) removes restrictions on use in manufacture of playing cards, pencils, house paint, label varnishes, toys and farm equipment finishes. Use form PD-339.

Nickel—M-6-c (as amended 6-19-42) to conform to new alloy steel scrap segregation order M-24-c.

Office Machinery—L-54-c regulates production and sets up distribution control. L-54-b has been revoked.

Osnaburg—L-99 Amend. #1 permits mills to sell or deliver without restrictions, seconds or cuts under 40 yards in length up to 6 percent of mill's production of bag osnaburg and bag sheetings.

Oil Burners—L-74 Amend. #1 permits production of "Class A" burners to fill A-10 orders.

Passenger Automobiles—M-130 sets up machinery for rationing to armed forces and government agencies engaged in prosecution of war. Use forms PD-501 and 502.

Petroleum—P-98 Amend. #1 extends provisions of original order to the Canadians. P-98 Amend. #2 forbids suppliers who are also Class I Producers from extending ratings except under

PRP or interim procedure prescribed by Priorities Regulation #11: order is also extended to July 31. M-68 Amend. #5 and M-68-c (as amended 3-23-42) Amend. #2 restricts original orders to United States, its territories and possessions and does not apply to Canadian oil companies. M-68-2 allows for drilling approximately 800 new wells in Missouri, Kansas and Oklahoma.

Pigs and Hog Bristles—M-51 Amend. #2 permits users to buy and accept deliveries of bristles to replace their inventory of finished products shipped on war orders.

Plumbing and Heating Equipment—P-84 Int. #1 interprets original order in regard to installation of new equipment.

Power (Electric)—L-117 Amend. #2 permits production, sale and delivery of heavy power and steam equipment not provided for in original order.

Power, Steam and Water Auxiliary Equipment—L-154 sharply curtails use of critical materials in manufacture of water meters.

Printing Ink—M-53 (as amended 6-29-42) permits use of chrome pigments in printing inks of 100 percent of the amount used in 1941 instead of 70 percent.

Protective Helmets—L-105 Amend. #1 permits assembly and sale of parts which were in process on April 29 and permits sale of those already manufactured.

Pyrethrum—M-179 establishes complete allocation control. Use form PD-591.

Quinine and Cinchona Bark Drugs—M-13 (as amended 4-30-42) Amend. #1 revokes provisions which exempted quinine or tototoquine stock of less than 50 ounces from sales restrictions of order. M-131-a prohibits sale of any amount of cinchonine, quinidine or conchoidine for other than anti-material purposes: use form PD-401-a.

Radio Receivers and Phonographs—L-44 Int. #1 clarifies certain subjects contained in original order.

Railroad Maintenance, Repair and Operating Supplies—P-81 Amend. #1 assigns higher rating for materials entering into supplies.

Razors and Razor Blades—L-72 Amend. #1 extends original order to July 31. L-72-a restricting sale of safety razors by manufacturers and jobbers has been revoked.

Rotenone—M-133 Amend. #1 permits use as an insecticide in treatment of cattle for grubs but restricts use as a germicide for citrus fruits.

Rubber and Rubber Products—M-15-b Amend. #10 prohibits importation except by military forces or subsidiaries of R. F. C. M-15-b-1 Amend. #6 requires use of more reclaimed rubber and less crude in making industrial pneumatic and solid tires. M-15-d restricts transaction in new aircraft tires and tubes. M-15-e restricts transaction in rubber life saving suits.

Safety Equipment—L-114 Amend. #1 changes required rating for sale of equipment using already fabricated materials. L-114 Amend. #2 permits use

(Continued on page 56)



DAVIS CYPRESS WATER TANKS

**For Any and All
INDUSTRIES**

We serve them all, but lately have built many tanks for the paper and allied industries. Nothing better than a well made cypress tank. Also wooden pipe. Send for catalogue.

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P. O. Box 5,
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SOUTHLAND PRODUCTS

—WELDED OR RIVETED—



We now manufacture and offer to the trade tanks in all sizes for pressure or gravity work. Also other steel equipment of either

**WELDED
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CONSTRUCTION**

This applies to field as well as shop built equipment.

Write us for information and quotations.

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In addition to water tanks we also build tanks for acid, dye, oil, creosote, chemicals, etc., as well as other fabricated products of Quality steel and alloy steel plate. Let us figure on your requirements.

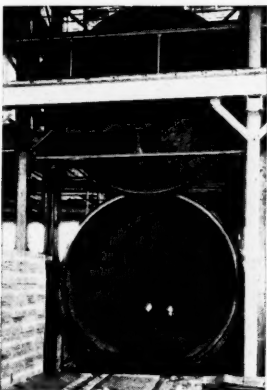
As erection for Mobile Water Works Write for "Tank Talk"—No. 8-D.

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15'3" O.D. x 40' Long Vulcanizer

ELEVATED TANKS—PRESSURE TANKS—STEEL STORAGE TANKS—PROCESS TANKS—BUTANE-PROPANE TANKS—STANDPIPES—RETORTS—BINS—EXTRACTORS—BARGES—DREDGE PIPE AND ACCESSORIES—WELDED PIPE—RIVETED PIPE.

General Steel Plate Construction
designed for your requirements.

LANCASTER IRON WORKS, INC.

LANCASTER, PENNSYLVANIA

Priorities Put in Effect During June

(Continued from page 54)

of rubber for purposes detailed by M-15-b.

Spices—M-127 Amend. #1 requires industrial receivers of restricted spices to compute their 1942 monthly quotas on amount used in corresponding quotas in 1941. M-127-a (as amended) is a supplementary order. M-127-a (as amended) Amend. #1 increases the amount of the monthly clove quota.

Springs and Mattresses (Bed)—L-49 Amend. #1 places restrictions on use of wire and prohibits production of mattresses containing iron and steel after Sept. 1.

Suppliers' Inventory — L-63 Amend. #4 removes railroad supplies from controls of original order. L-63 Exemp. #5 releases large group of iron-critical building material from restrictions of original order.

Tea—M-111 (as amended) Amend. #1 requires packers to deduct from their 1941 deliveries the amount delivered to certain quota exempt agencies before computing their 1942 monthly quotas. M-111-c sets the July and subsequent months quotas at 50 percent of the deliveries in the corresponding quarter of 1941.

Thermoplastics — M-154 establishes complete allocation control over distribution.

Tin—M-43-a (as amended 6-5-42) requires another 10 percent cut in use of tin in non-critical products, effective July 1: use form PD-229. M-115 Amend. #2 permits sale of tooth paste and shaving cream to armed forces without turning in old tube. M-43 (as amended 6-17-42) includes various amendments issued since original invoice date: use form PD-213. M-81 (as amended 6-27-42) prohibits manufacture or use of tinplate or terneplate cans for many chemicals, paints and other special products. M-81 Amend. #3 requires an additional 10 percent reduction in civilian apricot pack. M-81-a orders manufacturers of cans to use electrolytic tinplate and chemically treated blackplate wherever possible.

Tools—E-1-c assigns A-1-a rating to Canadian purchasers of machine tools. E-1-b Int. #1 interpretation regarding production and delivery of machine tools. E-6 limits type of steel which may be used in producing hard surface tools. E-6 Amend. #1 includes industrial hand files under original order.

Track-Laying Tractors and Auxiliary Equipment—L-53 Amend. #1 provides further control over this equipment.

Tungsten—M-29 (as amended 6-30-42) establishes further allocation and end-use control.

Utilities—P-46 (amended to 3-26-42) Ext. #1 and Amend. #1 assigns A-1-c rating for utility extension to housing projects and extends order to Sept. 30.

Vanadium — M-23-a (as amended June, 1942) establishes complete control of melting and delivery exceeding ten pounds per month. Use forms PD-209-a and PD-209-b.

Waste Paper—M-161 Amend. #1 re-

moves paper, paperboard, paper products, waste paper and ilmenite from inventory restrictions of Priorities Regulation #1.

Welding Rods and Electrodes—L-146 establishes complete allocation control.

Wool—M-73 (as amended for period July 5 to Aug. 2) extends order to allocate new wool for July. M-73 (as amended for period Aug. 3, 1942 to Jan. 31, 1943) extends order for six months; decreases wool available for all-wool fabrics; increases amount of new wool for cloth mixed with reworked or reused wool, cotton or rayon. M-87 Amend. #2 provides for sale of garments offered to Army and Navy but refused by them.

The Navy's 70-Ton "Mars"

(Continued from page 49)

award, Martin engineers undertook the project. Over 12,600 drawings were required to engineer the ship's details. The keel was laid in August of 1940, with the first such ceremony for an airplane. Wings were mounted in September and less than two months later the giant flying boat was the first vessel of its type to be accorded full Navy launching honors.

Crew of the official public test flight, in addition to Mr. Ebel and Pilot Gray, were: Ellis D. Shannon, co-pilot; Benjamin Zelubowski, flight engineer; S. K. Baker, assistant flight engineer; W. L. Pomeroy and H. G. Kelch, flight mechanics, and A. A. Joyce, chief flight test observer. Wallace W. Symington, project engineer, was also aboard, as were a group of engineering observers and technicians including M. Asper, H. R. McConahy, W. W. Pitman, W. B. Bergen, J. P. Paine, W. W. Bender and E. G. Riley. (S. A. L.)

New Industrial Plants and Expansions in the South

(Continued from page 50)

line, Inc., has for its president, W. Alton Jones, president of Cities Service Oil Co., B. E. Hull, president of Texas Pipeline Co. is vice-president and general manager; C. I. Thompson of Philadelphia, acting secretary and general counsel; War Emergency Pipeline, Inc., supersedes the National Defense Pipeline Co., chartered in State of Delaware; companies participating in the new organization are: Cities Service Oil Co.; Standard Oil Co. of New Jersey; Consolidated Oil Corp.; Sun Oil Co.; Atlantic Refining Co.; Socony-Vacuum Oil Co.; Tidewater Associated Oil Co.; Texas Co.; Gulf Oil Corp.; Pan-American Petroleum & Transport Co. and Shell Oil Co.

SOUTH

House of Representatives passed legislation authorizing construction of a pipe line and barge canal across Florida and a pipe-

line from Mississippi to Georgia; the \$93,000,000 authorization also provided for enlargement of Gulf Intracoastal waterway and its extension to Mexican border; an amendment was accepted authorizing construction of the pipe line from Tinsley, Miss. to the Savannah-Charleston, S. C. area; plans now under study to extend line from its terminus at Greensboro, N. C. northward to tidewater Virginia.

New Machine Tools Shipped in May Total \$118,500,000

The value of new machine tools, presses and other metal working machinery shipped during May was \$118,500,000.

Shipments of machine tools alone amounted to 25,700 units, with a total value of \$107,300,000. During April, 25,400 units, valued at \$103,364,000 were shipped.

Production of metal working machinery has reached a rate of more than \$1,400,000,000 a year and is steadily on the increase. Last year the value of metal working machinery was about \$840,000,000 and the present going rate represents an increase of more than 65 per cent.

Compared with the same month of last year, the May value for all metal working machinery is an increase of 80 per cent.

Manufacturers Helped to Borrow Over \$62,000,000 in June

In June the Bureau of Finance obtained \$62,120,464 for manufacturers engaged in war production, as compared with \$54,476,358 in May. In April the total was slightly more than 55 million dollars.

The financing in June was among 397 companies throughout the nation as compared with 429 companies in May and 289 companies in April.

Financing was secured from local banks, Federal Reserve Banks, the Army, Navy, Maritime Commission and other public and private agencies.

Motor Fuels From Coal Experiment Plant Planned

A far-reaching study of practical and economical methods for producing liquid motor fuels and lubricants from coal will be undertaken by the Bureau of Mines at Pittsburgh, Pa., as soon as a new experimental plant just authorized by Congress can be erected and equipped.

The Fischer-Tropsch method—one of the two direct processes for the production of motor fuels from coal—will be investigated with a view to developing means to produce gasoline from the coals of Alaska and the United States. The others methods—a modification of

(Continued on page 58)

Informative advertising dispels confusion

IT HAS LONG been an axiom of good sales executives that markets are always on the march—never static. Markets are never pools of people to which selling is applied, but a hurrying throng whose members think they want this thing today—but, by tomorrow, are likely to desire something else.

Demand, in spite of the classical economists, is seldom something awake and waiting for a product. More often it is a human trait hidden until the exact detonator explodes at the very spot that starts demand into action. Selling and that tool of selling called advertising are the detonators which transmute unexpressed demand into selling action.

National advertising is a specialized phase of the art of selling. Some people believe that it should be abolished for the duration. I disagree heartily. Today, more than ever before, distributors and consumers alike are confused. Informative advertising can and will help to dispel this confusion.

The educational value of advertising has been greatly underrated by its critics; frequently it has been underrated by advertisers themselves who abuse the confidence consumers would like to place in such advertising. But with new price regulations, rationing, shortages, the informative value of national advertising is evident. It can be a powerful force for distributor and consumer education.

From an address by Carroll L. Wilson, Director,
Bureau of Foreign & Domestic Commerce.

EPPINGER AND RUSSELL CO.

Wood Preservers Since 1878

All kinds of Structural Timbers and Lumber
Pressure Treated with Creosote Oil or

DU PONT C Z C
CHROMATED ZINC CHLORIDE

80 EIGHTH AVE., NEW YORK, N. Y.

POLES • CROSS ARMS • PILING • TIES
POSTS, BRIDGE AND DOCK TIMBERS

Treating Plants—JACKSONVILLE, FLA. • LONG ISLAND CITY, N. Y.

B. Mifflin Hood Co.

Chemical
Stoneware:

ALL TYPES
CHEMICAL BRICK
AND SHAPES.

SPIRAL RINGS,
DIAPHRAGM &
RASCHIG RINGS.



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& WALL TILE.

ROOF TILE
AND
FACE BRICK.

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Motor Fuels From Coal Experiment Plant Planned

(Continued from page 56)

the Bergius hydrogenation process—has been studied by Bureau chemists for several years.

This projected research will comprise another Bureau of Mines contribution to the Nation's wartime program for exploring and developing all possible sources of synthetic motor fuel for current emergencies and against the time when natural petroleum reservoirs may be depleted. The estimated life of petroleum reserves in the United States is said to be 15 years and we have already had a foretaste of what a shortage of motor fuels and lubricants can mean to this country.

"It is essential that steps be taken to provide for future needs and perhaps for immediate needs, such as supplying gasoline to air bases in Alaska and other remote outposts," Dr. R. R. Sayers, Director of the Bureau stated. "The new appropriation of approximately \$85,000 will enable the Bureau of Mines to establish a nucleus of men trained in the intricacies of the process who could assist or direct its industrial application wherever needed."

The experimental plant will have a capacity of about 100 pounds of gasoline per day and it will include chemical engineering equipment such as catalyst chambers, pumps, charcoal scrubbers, distillation columns, cracking units, and the necessary instruments for control. Future plans call for a pilot plant to handle about 10 tons a day, and also a small plant which can be moved and erected in a short time and at little cost.

The decision to study the Fischer-Tropsch process to produce motor fuels from water gas was influenced to a degree by the fact that this process is reported operating on an industrial scale in Europe, especially in Germany.

Developed since 1926 by Dr. F. Fischer in Germany, the raw material of the Fischer-Tropsch process is a mixture of

hydrogen and carbon monoxide gases produced from coal or coke and steam. After removal of sulphur compounds, this mixture is passed over a solid catalyst and the resultant products are propane, butane, gasoline, Diesel fuel, and paraffin wax. About four or five tons of coal will yield a ton of products under present limitations.

The hydrogenation process studied in recent years consists of liquefying powdered coal in a high-pressure vessel with the aid of a catalyst and hydrogen gas. After liquefaction, the product is separated into gasoline, middle oil, and heavy oil by methods similar to those used in refining petroleum. About five tons of coal are required to produce one ton of liquid fuel.

The advantages of the Fischer-Tropsch method for current purposes—to provide economical and easily-built units for United States military outposts such as Alaska—are self evident, Dr. Sayers stated. The smallest economical unit of the hydrogenation method is about 150,000 tons a year capacity, while a Fischer-Tropsch plant of 30,000 tons a year capacity may be operated economically. A smaller amount of precision machinery is required in the Fischer-Tropsch process and almost any type of coal can be used successfully. Certain coals, because of high ash content or sensitivity to temperature variations, offer serious operating difficulties in the hydrogenation method.

An important consideration with regard to building processing plants in remote military posts is that the smaller Fischer-Tropsch units would offer less of a target for bombers and saboteurs if such enemy activity was imminent.

In connection with the experimental plant at Pittsburgh, the Bureau of Mines also received some funds for testing the various types of coals for adaptation in the water-gas process. This work will be pursued by technicians in the Bureau's existing fuel-testing section which for a number of years has been investigating the fuel potentialities of coal

from the coal-producing States and Alaska.

Research in the production of motor fuels from coal not only will supply a definite wartime need, but it will also lay the ground work for future peacetime economy by preparing for the era when our natural petroleum resources may be exhausted. Both Germany and Japan have conducted extensive research on this process, and Germany is believed to have nine plants with a capacity of 650,000 tons of gasoline and Diesel oil a year.

No experimental work has been done on the Fischer-Tropsch process in the United States and no first-hand information is available on it, Dr. Sayers stated, adding that "the necessity for such work has assumed increased importance since the Nation is at war."

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